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61124  
**SEARCH REQUEST FORM**

Examiner # (Mandatory): 79046 Requester's Full Name: Preeti Kumar  
Art Unit 1751 Location (Bldg/Room#): CP3 9D03 Phone (circle 305 306 308) 0178  
Serial Number: 09/889,253 Results Format Preferred (circle) PAPER DISK E-MAIL  
Title of Invention Detergent Compositions comprising a peroxide base and  
abbeach system.  
Inventors (please provide full names): Please See Bib Sheet

Earliest Priority Date: 01/14/99

Keywords (include any known synonyms registry numbers, explanation of initialisms):

Please See Claims.

Thank you.

**Search Topic:**

Please write detailed statement of the search topic, and the concept of the invention. Describe as specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples of relevant citations, authors, etc., if known. You may include a copy of the abstract and the broadcast or most relevant claim(s).

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Clerical Prep Time: 20  
Terminal Time: 49  
Number of Databases: \_\_\_\_\_

Type of Search  
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\_\_\_\_ A.A. Sequence  
\_\_\_\_ Structure (#)  
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FILE COVERS 1907 - 4 Mar 2002 VOL 136 ISS 10

FILE LAST UPDATED: 3 Mar 2002 (20020303/ED).

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

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=> D QUE L35

L17 18 SEA FILE=REGISTRY ABB=ON (9015-75-2/BI OR 10484-48-7/BI OR 105-74-8/BI OR 1119-86-4/BI OR 1120-71-4/BI OR 117470-91-4/BI OR 184770-71-6/BI OR 205382-99-6/BI OR 212697-49-9/BI OR 3034-79-5/BI OR 3230-65-7/BI OR 34414-98-7/BI OR 5725-96-2/BI OR 64-04-0/BI OR 7440-48-4/BI OR 7757-82-6/BI OR 9033-35-6/BI OR 94-36-0/BI)

L19 2 SEA FILE=REGISTRY ABB=ON L17 AND LYASE

L20 1 SEA FILE=REGISTRY ABB=ON "PECTATE LYASE"/CN

L21 1 SEA FILE=REGISTRY ABB=ON "PECTIN LYASE"/CN

L22 2 SEA FILE=REGISTRY ABB=ON (L19 OR L20 OR L21)

L23 1766 SEA FILE=HCAPLUS ABB=ON L22 OR (PECTIN? OR PECTATE?) (3A)LYASE?

L24 42 SEA FILE=HCAPLUS ABB=ON L23 AND DETERGENT?

L25 36 SEA FILE=HCAPLUS ABB=ON L23 AND DETERGENT?/SC, SX

L26 23 SEA FILE=HCAPLUS ABB=ON (L24 OR L25) AND ?PEROX?

L27 1 SEA FILE=HCAPLUS ABB=ON (L24 OR L25) AND (?PERACID? OR ?PERCAR?)

L28 0 SEA FILE=HCAPLUS ABB=ON (L26 OR L27) AND METAL? (3A)BLEACH?

L29 0 SEA FILE=HCAPLUS ABB=ON (L26 OR L27) AND (MN OR MANGANESE OR COBALT? OR CO)

L30 1 SEA FILE=HCAPLUS ABB=ON (L26 OR L27) AND METAL?

L31 5 SEA FILE=HCAPLUS ABB=ON (L26 OR L27) AND BLEACH?

L32 7 SEA FILE=HCAPLUS ABB=ON (L27 OR L28 OR L29 OR L30 OR L31)

L33 6 SEA FILE=HCAPLUS ABB=ON L32 AND DETERGENT?/SC, SX

L34 20 SEA FILE=HCAPLUS ABB=ON L26 AND DETERGENT?/SC, SX  
L35 21 SEA FILE=HCAPLUS ABB=ON L33 OR L34

=> FILE WPIX

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FILE LAST UPDATED: 01 MAR 2002 <20020301/UP>  
MOST RECENT DERWENT UPDATE 200214 <200214/DW>  
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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=> D QUE L37

L17 18 SEA FILE=REGISTRY ABB=ON (9015-75-2/BI OR 10484-48-7/BI OR  
105-74-8/BI OR 1119-86-4/BI OR 1120-71-4/BI OR 117470-91-4/BI  
OR 184770-71-6/BI OR 205382-99-6/BI OR 212697-49-9/BI OR  
3034-79-5/BI OR 3230-65-7/BI OR 34414-98-7/BI OR 5725-96-2/BI  
OR 64-04-0/BI OR 7440-48-4/BI OR 7757-82-6/BI OR 9033-35-6/BI  
OR 94-36-0/BI)  
L19 2 SEA FILE=REGISTRY ABB=ON L17 AND LYASE  
L20 1 SEA FILE=REGISTRY ABB=ON "PECTATE LYASE"/CN  
L21 1 SEA FILE=REGISTRY ABB=ON "PECTIN LYASE"/CN  
L22 2 SEA FILE=REGISTRY ABB=ON (L19 OR L20 OR L21)  
L23 1766 SEA FILE=HCAPLUS ABB=ON L22 OR (PECTIN? OR PECTATE?) (3A) LYASE?  
  
L36 32 SEA FILE=WPIX ABB=ON L23 AND DETERGENT?  
L37 17 SEA FILE=WPIX ABB=ON L36 AND (?PEROX? OR ?PERACID? OR  
?PERCAR?)

=> DUP REM L35 L37

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PROCESSING COMPLETED FOR L35  
PROCESSING COMPLETED FOR L37  
L38 31 DUP REM L35 L37 (7 DUPLICATES REMOVED)

=> D L38 ALL 1-31

L38 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2002 ACS  
AN 2002:72246 HCAPLUS  
DN 136:130769  
TI Recombinant *Bacillus pectate lyases* with improved

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thermostability and their use in **detergents**  
 IN Schuelein, Martin; Glad, Sanne O. Schroder; Andersen, Carsten; Frandsen, Torben Peter  
 PA Novozymes A/S, Den.  
 SO PCT Int. Appl., 158 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C12N  
 CC 7-2 (Enzymes)  
 Section cross-reference(s): 3, 46  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002006442	A2	20020124	WO 2001-DK505	20010717
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	DK 2000-1117	A	20000719		
	DK 2001-705	A	20010504		
	DK 2001-734	A	20010510		
AB	A variant of a cell-wall degrading enzyme having a beta-helix structure, which variant holds at least one substituent in a position detd. by identifying all residues potentially belonging to a stack; characterizing the stack as interior or exterior; characterizing the stack as polar, hydrophobic, or arom./heteroarom. based on the dominating characteristics of the parent or wild-type enzyme stack residues and/or its orientation relative to the beta-helix (interior or exterior); optimizing all stack positions of a stack either to hydrophobic aliph. amino acids, hydrophobic arom. or polar amino acids by allowing mutations within one or all positions to amino acids belonging to one of these groups; measuring thermostability of the variants by DSC or an application-related assay such as a Pad-Steam application test; and selecting the stabilized variants is disclosed. Variants of a <i>Bacillus licheniformis</i> <b>pectate lyase</b> (EC 4.2.2.2) are preferred. Thus, recombinant <i>B. subtilis</i> was used to prep. M169I, F198V <b>pectate lyase</b> mutant. This mutant was denatured at 77.degree., unlike the parent enzyme which was denatured at 69.degree..				
ST	sequence <i>Bacillus</i> <b>pectate lyase</b> substitution mutant thermostability; cellulosic fiber treatment recombinant thermostable <i>Bacillus</i> <b>pectate lyase</b> ; <b>detergent</b> recombinant thermostable <i>Bacillus</i> <b>pectate lyase</b>				
IT	Fibers RL: MSC (Miscellaneous) (cellulosic, improvement of; recombinant <i>Bacillus</i> <b>pectate lyases</b> with improved thermostability and their use in <b>detergents</b> )				
IT	Gene, microbial RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses) (for <b>pectate lyase</b> variants; recombinant <i>Bacillus</i> <b>pectate lyases</b> with improved thermostability and their use in <b>detergents</b> )				
IT	Textiles				

## Yarns

(improvement of; recombinant *Bacillus pectate lyases*  
with improved thermostability and their use in **detergents**)

## IT Molecular cloning

(of **pectate lyase** mutant genes; recombinant  
*Bacillus pectate lyases* with improved  
thermostability and their use in **detergents**)

## IT Detergents

## Pulping

## Thermal stability

(recombinant *Bacillus pectate lyases* with improved  
thermostability and their use in **detergents**)

## IT Recycling

(wastepaper; recombinant *Bacillus pectate lyases*  
with improved thermostability and their use in **detergents**)

IT 393200-44-7DP, derivs. 393200-45-8P 393200-46-9P 393200-47-0P  
393200-48-1P 393200-49-2P 393200-50-5P 393200-51-6P 393200-52-7P  
393200-53-8P 393200-54-9P 393200-55-0P 393200-56-1P 393200-57-2P  
393200-58-3P 393200-59-4P 393200-60-7P 393200-61-8P 393200-62-9P  
393200-63-0P 393200-64-1P 393200-65-2P 393200-66-3P 393200-67-4P  
393200-68-5P 393200-69-6P 393200-70-9P 393200-71-0P 393200-72-1P  
393200-73-2P 393200-74-3P 393200-75-4P 393200-76-5P 393200-77-6P  
393200-78-7P 393200-79-8P 393200-80-1P 393200-81-2P 393200-82-3P  
393200-83-4P 393200-84-5P 393200-85-6P 393200-86-7P 393200-87-8P  
393200-88-9P 393200-89-0P 393200-90-3P 393200-91-4P 393200-92-5P  
393200-93-6P 393200-94-7P 393200-95-8P 393200-96-9P 393200-97-0P  
393200-98-1P 393200-99-2P 393201-00-8P 393201-01-9P 393201-02-0P  
393201-03-1P 393201-04-2P 393201-05-3P 393201-06-4P 393201-07-5P  
393201-08-6P 393201-09-7P 393201-10-0P 393201-11-1P 393201-12-2P  
393201-13-3P 393201-14-4P 393201-15-5P 393201-16-6P 393201-17-7P  
393201-18-8P 393201-19-9P 393201-20-2P 393201-21-3P 393201-22-4P  
393201-23-5P 393201-24-6P 393201-25-7P 393201-26-8P 393201-27-9P  
393201-28-0P 393201-29-1P 393201-30-4P 393201-31-5P 393201-32-6P  
393201-33-7P 393201-34-8P 393201-35-9P 393201-36-0P 393201-37-1P  
393201-38-2P 393201-39-3P

RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP  
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(amino acid sequence; recombinant *Bacillus pectate*  
**lyases** with improved thermostability and their use in  
**detergents**)

## IT 393200-43-6D, derivs.

RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological  
study); USES (Uses)

(nucleotide sequence; recombinant *Bacillus pectate*  
**lyases** with improved thermostability and their use in  
**detergents**)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease  
9002-10-2, Phenol oxidase 9003-99-0, **Peroxidase** 9012-54-8,  
Cellulase 9025-56-3, Hemicellulase 9025-98-3, **Pectin**  
methylesterase 9032-08-0, Glucoamylase 9032-75-1, **Pectinase**  
**9033-35-6, Pectin lyase** 9035-73-8, Oxidase  
9037-80-3, Reductase 9067-74-7, Arabinosidase 9074-98-0,  
.beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase  
37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 42613-30-9,  
Ligninase 51377-41-4, Cutinase 60748-69-8, Mannanase 76901-10-5,  
Xyloglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase  
131384-64-0, Rhamnogalacturonase 132965-81-2, **Pectin** acetyl  
esterase

RL: NUU (Other use, unclassified); USES (Uses)  
(**pectate lyase** variants and; recombinant *Bacillus*

pectate lyases with improved thermostability and their use in detergents)

IT 9015-75-2DP, E.C. 4.2.2.2, derivs.  
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (recombinant Bacillus pectate lyases with improved thermostability and their use in detergents)

IT 393201-59-7 393201-60-0 393201-61-1 393201-62-2 393201-63-3  
 393201-64-4 393201-65-5 393201-66-6 393201-67-7 393201-68-8  
 393201-69-9 393201-70-2 393201-71-3  
 RL: PRP (Properties)  
 (unclaimed nucleotide sequence; recombinant Bacillus pectate lyases with improved thermostability and their use in detergents)

IT 393201-72-4  
 RL: PRP (Properties)  
 (unclaimed protein sequence; recombinant Bacillus pectate lyases with improved thermostability and their use in detergents)

IT 393201-73-5 393201-74-6 393201-75-7 393201-76-8 393201-77-9  
 393201-78-0 393201-79-1 393201-80-4  
 RL: PRP (Properties)  
 (unclaimed sequence; recombinant Bacillus pectate lyases with improved thermostability and their use in detergents)

L38 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 1

AN 2001:661565 HCAPLUS

DN 135:223448

TI Cloning, characterization and use in liquid detergent

compositions of family 5 xyloglucanases from Paenibacillus

IN Wilting, Reinhard; Bjornvad, Mads Eskelund; Kauppinen, Markus Sakari; Schuelein, Martin

PA Novozymes A/S, Den.

SO PCT Int. Appl., 99 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 40, 43, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001064853	A1	20010907	WO 2001-DK132	20010228
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

PRAI DK 2000-326 A 20000301

AB Xyloglucanases belonging to family 5 of glycosyl hydrolases are derived from strains of Paenibacillus, esp. from strains of Paenibacillus pabuli. Cloning, sequence, expression and characterization of xyloglucanases from Paenibacillus pabuli and Paenibacillus strain DSM 13330 are reported.

Cloning and sequencing of xyloglucanase-encoding genes from *Paenibacillus pabuli* and *Paenibacillus* strain DSM 13330 and expression and characterization of the encoded xyloglucanases is described. The xyloglucanases show high performance in conventional liq.

**detergent** compns.

ST *Paenibacillus* xyloglucanase gene sequence liq **detergent**

IT Fibers

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(cellulosic, improving and processing of; cloning, characterization and use in liq. **detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT DNA sequences

*Lactobacillus*

Molecular cloning

*Paenibacillus*

*Paenibacillus pabuli*

Protein sequences

Scouring agents

(cloning, characterization and use in liq. **detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT Probes (nucleic acid)

RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)

(cloning, characterization and use in liq. **detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT **Detergents**

(enzyme-contg.; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT *Cannabis sativa*

(fiber, processing of; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT Gene, microbial

RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)

(for xyloglucanase; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT Nonwoven fabrics

Textiles

Yarns

(improving and processing of; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT **Detergents**

(laundry, enzyme-contg.; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT Yarns

(linen, processing of; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT Flax

Jute fibers

(processing of; cloning, characterization and use in liq.

**detergent** compns. of family 5 xyloglucanases from *Paenibacillus*)

IT *Bacillus* (bacterium genus)



Gram-positive bacteria (Firmicutes)

(xyloglucanase from; cloning, characterization and use in liq.  
**detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)

- IT 358687-47-5P, Xyloglucanase (Paenibacillus pabuli)  
RL: BAC (Biological activity or effector, except adverse); BPN  
(Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive  
use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES  
(Uses)  
(amino acid sequence; cloning, characterization and use in liq.  
**detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)
- IT 358687-46-4DP, subfragments are claimed 358687-48-6DP, subfragments are  
claimed  
RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological  
study); PREP (Preparation)  
(amino acid sequence; cloning, characterization and use in liq.  
**detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)
- IT 76901-10-5P, Xyloglucanase  
RL: BAC (Biological activity or effector, except adverse); BPN  
(Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive  
use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES  
(Uses)  
(cloning, characterization and use in liq. **detergent** compns.  
of family 5 xyloglucanases from Paenibacillus)
- IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease  
9002-10-2, Phenoloxidase 9003-99-0, Peroxidase 9012-54-8,  
Cellulase 9015-75-2, Pectate lyase  
9025-98-3, Pectin methylesterase 9032-08-0, Glucoamylase 9032-75-1,  
Pectinase 9033-35-6, Pectin lyase  
9034-32-6, Hemicellulose 9035-73-8, Oxidase 9037-80-3, Reductase  
9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0,  
Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase  
51377-41-4, Cutinase 60748-69-8, Mannanase 80146-85-6,  
Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase  
132965-81-2, Pectin acetyl esterase  
RL: CAT (Catalyst use); MOA (Modifier or additive use); USES (Uses)  
(compn. contg. xyloglucanase and; cloning, characterization and use in  
liq. **detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)
- IT 358687-42-0D, subfragments are claimed 358687-43-1 358687-44-2D,  
subfragments are claimed 358687-45-3D, subfragments are claimed  
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological  
study); USES (Uses)  
(nucleotide sequence; cloning, characterization and use in liq.  
**detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)
- IT 261154-33-0, 15: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-34-1, 16:  
PN: WO0164853 PAGE: 59 unclaimed DNA 261154-35-2, 17: PN: WO0164853  
PAGE: 59 unclaimed DNA 261154-36-3, 18: PN: WO0164853 PAGE: 59 unclaimed  
DNA 261154-37-4, 19: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-38-5,  
20: PN: WO0164853 PAGE: 59 unclaimed DNA 358703-06-7 358703-08-9, 21:  
PN: WO0164853 PAGE: 67 unclaimed DNA 358703-09-0, 22: PN: WO0164853  
PAGE: 67 unclaimed DNA 358703-10-3, 23: PN: WO0164853 PAGE: 71 unclaimed  
DNA 358703-11-4, 24: PN: WO0164853 PAGE: 71 unclaimed DNA  
RL: PRP (Properties)  
(unclaimed nucleotide sequence; cloning, characterization and use in  
liq. **detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)

IT 358703-01-2 358703-02-3 358703-03-4 358703-04-5 358703-05-6  
358703-07-8  
RL: PRP (Properties)  
(unclaimed protein sequence; cloning, characterization and use in liq.  
**detergent** compns. of family 5 xyloglucanases from  
Paenibacillus)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Blanco, A; Appl Microbiol Biotechnol 1998, V50, P48 HCAPLUS
- (2) Coutinho, P; <http://afmb.cnrs-mrs.fr/~pedro/CAZY/db.html> 1999
- (3) Novo Nordisk AS; WO 9902663 A1 1999 HCAPLUS

L38 ANSWER 3 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 2

AN 2001:636195 HCAPLUS

DN 135:192166

TI Cloning, recombinant expression and use in **detergent**  
compositions of family 44 xyloglucanases from Paenibacillus

IN Schnorr, Kirk; Jorgensen, Per Lina; Schuelein, Martin

PA Novozymes A/S, Den.

SO PCT Int. Appl., 96 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 40, 43, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001062903	A1	20010830	WO 2001-DK116	20010221
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			

PRAI DK 2000-291 A 20000224

AB Xyloglucanases belonging to family 44 of glycosyl hydrolases and having a relative xyloglucanase activity of at least 30 between pH 5 and pH 8 are derived from the genus Paenibacillus, esp. from a strain of Paenibacillus polymyxa or Paenibacillus sp. Cloning of xyloglucanase-encoding genes from Paenibacillus polymyxa and subcloning and expression in Bacillus subtilis of a core part of the xyloglucanase from P. polymyxa is described. The xyloglucanases exhibit high performance in conventional **detergent** compns.

ST Paenibacillus xyloglucanase gene sequence **detergent**

IT Fibers

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(cellulosic, improving properties and processing of; cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from Paenibacillus)

IT Escherichia coli

(cloning host; cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from Paenibacillus)

- IT DNA sequences  
Molecular cloning  
Paenibacillus  
Paenibacillus pabuli  
Paenibacillus polymyxa  
Protein sequences  
Scouring agents  
(cloning, recombinant expression and use in **detergent** compns.  
of family 44 xyloglucanases from Paenibacillus)
- IT Probes (nucleic acid)  
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST  
(Analytical study); BIOL (Biological study); USES (Uses)  
(cloning, recombinant expression and use in **detergent** compns.  
of family 44 xyloglucanases from Paenibacillus)
- IT **Detergents**  
(enzyme-contg.; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT Cannabis sativa  
(fiber, processing of; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT Nonwoven fabrics  
Textiles  
Yarns  
(improving properties of; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT **Detergents**  
(laundry, enzyme-contg.; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT Yarns  
(linen, processing of; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT Flax  
Jute fibers  
(processing of; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT Bacillus (bacterium genus)  
Bacteria (Eubacteria)  
Fungi  
Gram-positive bacteria (Firmicutes)  
Lactobacillus  
Microorganism  
Yeast  
(xyloglucanase from; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT 357247-95-1P  
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or  
additive use); PRP (Properties); BIOL (Biological study); PREP  
(Preparation); USES (Uses)  
(amino acid sequence; cloning, recombinant expression and use in  
**detergent** compns. of family 44 xyloglucanases from  
Paenibacillus)
- IT 357247-94-ODP, subfragments are claimed 357247-96-2DP, subfragments are  
claimed 357247-97-3DP, subfragments are claimed

RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(amino acid sequence; cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from *Paenibacillus*)

IT 76901-10-5P, Xyloglucanase

RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)

(cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from *Paenibacillus*)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease 9002-10-2, Phenoloxidase 9003-99-0, **Peroxidase** 9012-54-8, Cellulase **9015-75-2, Pectate lyase** 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase 9032-08-0, Glucoamylase 9032-75-1, Pectinase **9033-35-6, Pectin lyase** 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase 51377-41-4, Cutinase 60748-69-8, Mannanase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase

RL: CAT (Catalyst use); MOA (Modifier or additive use); USES (Uses)  
(compn. contg. xyloglucanase and; cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from *Paenibacillus*)

IT 357247-91-7D, subfragments are claimed 357247-92-8D, subfragments are claimed 357247-93-9D, subfragments are claimed 357247-98-4  
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)

(nucleotide sequence; cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from *Paenibacillus*)

IT 261154-33-0, 7: PN: WO0162903 SEQID: 36 unclaimed DNA 261154-34-1, 8: PN: WO0162903 SEQID: 37 unclaimed DNA 261154-35-2, 9: PN: WO0162903 SEQID: 38 unclaimed DNA 261154-36-3 261154-37-4 261154-38-5 355485-14-2 355485-15-3 357257-08-0 357257-09-1

RL: PRP (Properties)

(unclaimed nucleotide sequence; cloning, recombinant expression and use in **detergent** compns. of family 44 xyloglucanases from *Paenibacillus*)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Clariant Finance Limited; EP 0921188 A2 1999 HCAPLUS
- (2) Coutinho, P; <http://afmb.cnrs-mrs.fr/~pedro/CAZY/db.html> 1999
- (3) Hansen, C; J Bacteriol 1992, V174(11), P3522 HCAPLUS
- (4) Novo Nordisk AS; WO 9110732 A1 1991 HCAPLUS
- (5) Novo Nordisk AS; WO 9117244 A1 1991 HCAPLUS
- (6) Novo Nordisk AS; WO 9838288 A1 1998 HCAPLUS

L38 ANSWER 4 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 3

AN 2001:137358 HCAPLUS

DN 134:204347

TI Characterization and production of purified alkaline xyloglucanase from *Malbranchea* and applications to laundry **detergents** and treatment of textiles

IN Wu, Wenping; Schulein, Martin; Kauppinen, Markus Sakari; Stringer, Mary Ann

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 89 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C12N009-42; C12R001-645; C11D003-386; D06M016-00

CC 7-5 (Enzymes)

Section cross-reference(s): 3, 10, 16, 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001012794	A1	20010222	WO 2000-DK450	20000811
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

PRAI DK 1999-1121 A 19990813

US 1999-149397 P 19990817

AB An isolated or purified polypeptide having xyloglucanase activity which is obtained from a strain of the genus *Malbranchea* and has xyloglucanase activity in the pH range 4-11, measured at 50.degree.; and/or a mol. mass of 25.+- .10 kDa, as detd. by SDS-PAGE; and/or an isoelec. point (pI) in the range 3-5; and/or an N-terminal sequence Ala-Asp-Phe-Cys-Gly-Gln-Xaa-Asp-Ser-Glu-Gln-Ser-Gly-Pro-Tyr-Ile-Val-Tyr-Asn-Asn- eu is useful in industrial applications such as in laundry **detergent** compns. and for treatment of textiles. Cloning, cDNA and encoded amino acid sequences of full-length xyloglucanase from *Malbranchea cinnamomea* are disclosed. Purifn. and characterization of the *M. cinnamomea* are also disclosed.

ST *Malbranchea* xyloglucanase cDNA sequence laundry **detergent** textile

IT Fibers

RL: PEP (Physical, engineering or chemical process); PROC (Process) (cellulosic; characterization and prodn. of purified alk. xyloglucanase from *Malbranchea* and applications to laundry **detergents** and treatment of textiles)

IT Fermentation

Malbranchea

Malbranchea albolutea

Malbranchea arcuata

Malbranchea aurantiaca

Malbranchea bolognesii-chiurcoi

Malbranchea chrysosporioidea

Malbranchea cinnamomea

Malbranchea circinata

Malbranchea dendritica

Malbranchea filamentosa

Malbranchea flava

Malbranchea flavorosea

Malbranchea flocciformis

Malbranchea fulva

Malbranchea graminicola

Malbranchea gypsea

Malbranchea kambayashii

Malbranchea multicolor

Malbranchea pulchella

Malbranchea sclerotica

Malbranchea setosa  
Molecular cloning  
Nonwoven fabrics  
Protein sequences  
Scouring agents  
Thermal stability  
Yarns  
cDNA sequences

(characterization and prodn. of purified alk. xyloglucanase from  
Malbranchea and applications to laundry **detergents** and  
treatment of textiles)

IT **Detergents**

(enzyme-contg.; characterization and prodn. of purified alk.  
xyloglucanase from Malbranchea and applications to laundry  
**detergents** and treatment of textiles)

IT Cannabis sativa

(fiber, ratting of; characterization and prodn. of purified alk.  
xyloglucanase from Malbranchea and applications to laundry  
**detergents** and treatment of textiles)

IT **Detergents**

(laundry, enzyme-contg.; characterization and prodn. of purified alk.  
xyloglucanase from Malbranchea and applications to laundry  
**detergents** and treatment of textiles)

IT Textiles

Yarns

(linen, ratting of; characterization and prodn. of purified alk.  
xyloglucanase from Malbranchea and applications to laundry  
**detergents** and treatment of textiles)

IT Flax

Jute fibers

(ratting of; characterization and prodn. of purified alk. xyloglucanase  
from Malbranchea and applications to laundry **detergents** and  
treatment of textiles)

IT Textiles

(woven; characterization and prodn. of purified alk. xyloglucanase from  
Malbranchea and applications to laundry **detergents** and  
treatment of textiles)

IT 328049-36-1DP, subfragments are claimed

RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);  
PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(amino acid sequence; characterization and prodn. of purified alk.  
xyloglucanase from Malbranchea and applications to laundry  
**detergents** and treatment of textiles)

IT 328049-38-3DP, subfragments are claimed

RL: BPN (Biosynthetic preparation); MOA (Modifier or additive use); PRP  
(Properties); PUR (Purification or recovery); BIOL (Biological study);  
PREP (Preparation); USES (Uses)  
(amino acid sequence; characterization and prodn. of purified alk.  
xyloglucanase from Malbranchea and applications to laundry  
**detergents** and treatment of textiles)

IT 76901-10-5P, Xyloglucanase

RL: BPN (Biosynthetic preparation); MOA (Modifier or additive use); PRP  
(Properties); PUR (Purification or recovery); BIOL (Biological study);  
PREP (Preparation); USES (Uses)  
(characterization and prodn. of purified alk. xyloglucanase from  
Malbranchea and applications to laundry **detergents** and  
treatment of textiles)

IT 326856-38-6

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL  
(Biological study)

- (characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- IT 9032-92-2, Glycosidase  
RL: BSU (Biological study, unclassified); BIOL (Biological study) (family 12; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- IT 328049-35-0D, subfragments are claimed 328049-37-2D, subfragments are claimed  
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)  
(nucleotide sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease 9002-10-2, Phenoloxidase 9003-99-0, Peroxidase 9012-54-8, Cellulase 9015-75-2, Pectate lyase 9025-56-3, Hemicellulase 9025-98-3, Pectinmethylesterase 9032-08-0, Glucoamylase 9032-75-1, Pectinase 9033-35-6, Pectin lyase 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase 51377-41-4, Cutinase 60748-69-8, Mannanase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase  
RL: TEM (Technical or engineered material use); USES (Uses)  
(prepn. contg. xyloglucanase and; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- IT 308309-96-8 308309-97-9 308309-98-0 308309-99-1 308310-01-2 328051-38-3 328051-39-4 328051-40-7 328051-41-8 328051-42-9  
RL: PRP (Properties)  
(unclaimed nucleotide sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- IT 328068-67-3  
RL: PRP (Properties)  
(unclaimed protein sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- IT 9004-32-4, Carboxymethylcellulose 9004-34-6, Avicel, biological studies 327981-25-9, AZCL-HE-Cellulose  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(xyloglucanase exhibiting no activity on; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)
- RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE  
(1) Ajinomoto KK; JP 50-68549 A 1993  
(2) Kauppinen, S; GenBank Accession No AF043595 1999  
(3) Novo Nordisk AS; WO 9414953 A1 1994 HCAPLUS  
(4) Novo Nordisk AS; WO 9902663 A1 1999 HCAPLUS  
(5) Rejon-Palomares, A; Symbiosis 1996, V21, P249 HCAPLUS  
(6) The Procter & Gamble Company; WO 9850513 A1 1998 HCAPLUS  
(7) Unilever Plc; WO 9317101 A1 1993 HCAPLUS  
(8) Virk, S; Indian Journal of Microbiology 1996, V36, P53

L38 ANSWER 5 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD  
AN 2001-316437 [33] WPIX

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

DNC C2001-097535

TI Screening for microbial-produced products by sequential use of different high throughput assays combines their advantages and is useful to select clones producing industrial enzymes or pharmaceuticals.

DC B04 D16

IN HANSEN, P K; KONGSBK, L; MOELLER, S; PEDERSEN, H

PA (NOVO) NOVOZYMES AS

CYC 93

PI WO 2001032858 A1 20010510 (200133)\* EN 55p C12N015-10

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM  
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC  
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE  
SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000076461 A 20010514 (200149) C12N015-10

ADT WO 2001032858 A1 WO 2000-DK567 20001010; AU 2000076461 A AU 2000-76461 20001010

FDT AU 2000076461 A Based on WO 200132858

PRAI DK 1999-1604 19991105

IC ICM C12N015-10

ICS C12Q001-00; C12Q001-68

ICA C12N009-00

AB WO 200132858 A UPAB: 20010615

NOVELTY - A high throughput screening (HTS) method for a microbial-produced material, comprising sequentially performing at least two different HTS assays from FACS, array-based, colony picking, substrate replacement and substrate reloading assays, is new.

USE - The invention is used to screen microorganisms or gene libraries for production of secreted products, particularly for use as industrial enzymes or pharmaceutical products.

ADVANTAGE - Sequentially using two or more different high throughput assays is more efficient and accurate than using a single assay, as it combines the advantages of different assays. For example a pre-screen substrate reloading assay will first semi-quantitatively select clones of interest, whilst an array-based assay will rank the isolated clones in a more quantitative manner according to activity.

Dwg.0/0

FS CPI

FA AB; DCN

MC CPI: B04-C01; B04-E01; B04-F09; B04-F10; B04-L01; B11-C09; B12-K04E;  
D05-H09; D05-H12

L38 ANSWER 6 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2001-328786 [34] WPIX

DNC C2001-100876

TI High throughput screening of host cell population for producing desired molecule, by culturing host cells in spatial array, assaying array positions for producing molecule and selecting cells from assayed positions.

DC B04 C06 D16

IN BECK, T C; ERNST, S; FRISNER, H; HANSEN, P K; HUSUM, T L; JOERGENSEN, B R;  
KONGSBK, L; LAMSA, M; PEDERSEN, H; VIND, J; VON OSSOWSKI, I

PA (NOVO) NOVOZYMES AS

CYC 93

PI WO 2001032844 A1 20010510 (200134)\* EN 74p C12N009-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM  
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC



LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE  
 SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW  
 AU 2000076462 A 20010514 (200149) C12N009-00  
 ADT WO 2001032844 A1 WO 2000-DK568 20001010; AU 2000076462 A AU 2000-76462  
 20001010  
 FDT AU 2000076462 A Based on WO 200132844  
 PRAI DK 1999-1605 19991105  
 IC ICM C12N009-00  
 ICS C12M001-18  
 AB WO 200132844 A UPAB: 20010620  
 NOVELTY - High throughput screening (M1) of a large population of host  
 cells for production of a molecule, involves arranging the host cells in  
 spatial array so each position in the spatial array is occupied by one  
 cell, cultivating the host cells, assaying each array positions for  
 production of the molecule of interest, and selecting the cells from those  
 positions where the molecule was produced.  
 DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the  
 following:  
 (1) screening (M2) a DNA library for DNA of interest, involves  
 creating host cells comprising the DNA library, and using (M1) to assays  
 for a host cell producing a molecule of interest, where the host cell  
 comprises DNA of interest;  
 (2) a recombinant vector (I) comprising DNA isolated by (M2);  
 (3) a recombinant host cell (II) comprising DNA isolated by (M2) or  
 (I);  
 (4) a transgenic animal (III) containing and expressing the DNA of  
 interest isolated by (M2); and  
 (5) a transgenic plant (IV) containing and expressing the DNA of  
 interest isolated by (M2).  
 USE - M1 is useful for determination of a chemical or physical event  
 in a live cell, preferably lysis, growth inhibition, growth promotion, or  
 production of a protein of a protein or another molecule by the cell, for  
 determination of an event in which the molecule of interest interacts with  
 another molecule, preferably leading to a binding event or a chemical  
 modification of the other molecule, or for determination of the cleavage,  
 isomerization, ligation or other modification of a substrate, where the  
 substrate is a polymer preferably of polypeptides, cellulose,  
 polysaccharides or starches and is immobilized to the surface of a solid  
 material, preferably textile or ceramics. The substrate is a solid  
 surface, preferably a cellulose swatch, and is labeled with a detectable  
 probe which is fluorescent, preferably fluorescein-5-isothiocyanate (FITC)  
 or dichlorotriazino-5-aminofluorescein (DTAF). (II) is useful for  
 producing a molecule of interest, by cultivating (II) in suitable culture  
 medium under conditions permitting expression of the DNA of interest and  
 recovering the resulting molecule from the culture medium. (III) is useful  
 for producing a material of interest by recovering the molecule from any  
 part or secrete of/from (III). (IV) is useful for producing a molecule of  
 interest by growing a cell of (IV) and recovering the molecule from the  
 resulting plant (all claimed).  
 ADVANTAGE - (M1) efficiently and accurately screens large numbers of  
 cell populations producing variants of a molecule of interest. In (M1),  
 the conditions of growth is defined so as to achieve a uniform  
 distribution of growth and gene expression in identical clones in the  
 wells of the same microtiter plate and the HTS assay is independent of  
 molecule concentration within a broad range.  
 Dwg.0/0  
 FS CPI  
 FA AB; DCN  
 MC CPI: B04-E03; B04-E08; B04-F0100E; B04-F0700E; B11-C07B3; B11-C08;  
 B11-C08E2; B12-K04E; B14-A04A; C04-E03; C04-E08; C04-F0100E;

C04-F0700E; C04-F0800E; C11-C07B3; C11-C08; C11-C08E2; C12-K04E;  
C14-A04A; D05-H09; D05-H12E; D05-H14; D05-H16A; D05-H16B

L38 ANSWER 7 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 4  
AN 2000:666862 HCAPLUS  
DN 133:248956  
TI Cloning, expression, purifn. and characterization of a **pectate lyase** from *Bacillus* and its use in laundering and textile processing  
IN Bjornvad, Mads Eskelund; Andersen, Jens Tonne; Schnorr, Kirk; Schulein, Martin; Kongsbak, Lars  
PA Novo Nordisk A/s, Den.  
SO PCT Int. Appl., 64 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
IC ICM C12N009-88  
ICS C12N009-88; C12R001-01; C11D003-386  
CC 7-5 (Enzymes)  
Section cross-reference(s): 3, 10, 17, 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000055309	A1	20000921	WO 2000-DK111	20000315
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
PRAI	DK 1999-367	A	19990316		
AB	Cloning, expression, purifn. and characterization of a <b>pectate lyase</b> from <i>Bacillus</i> sp. belonging to a novel family of polysaccharide lyases is disclosed. Nucleotide sequence of the <b>pectate lyase</b> gene and amino acid sequence of the encoded enzyme are reported. This novel <b>pectate lyase</b> of <i>Bacillus</i> has good performance in industrial processes under neutral or alk. conditions such as laundering and textile processing.				
ST	<i>Bacillus</i> <b>pectate lyase</b> gene sequence laundering textile processing				
IT	Nucleic acid hybridization (DNA-DNA; cloning, expression, purifn., characterization and uses of <b>pectate lyase</b> from <i>Bacillus</i> )				
IT	Enzyme functional sites (cellulose-binding domain, fusion products with <b>pectate lyase</b> ; cloning, expression, purifn., characterization and uses of <b>pectate lyase</b> from <i>Bacillus</i> )				
IT	Fibers RL: PEP (Physical, engineering or chemical process); PROC (Process) (cellulosic; cloning, expression, purifn., characterization and uses of <b>pectate lyase</b> from <i>Bacillus</i> )				
IT	Textiles Yarns (cloning, expression, purifn. and characterization of <b>pectate lyase</b> from <i>Bacillus</i> and its use in laundering and textile processing)				
IT	<i>Bacillus</i> (bacterium genus)				

- Cellulose pulp
- Cleaning solvents
- DNA sequences
- Feed additives
- Molecular cloning
- Nucleic acid hybridization
- Protein sequences
- Scouring agents
  - (cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Probes (nucleic acid)
  - RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
  - (cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Plant tissue
  - (degrdn. or modification of; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Detergents
  - (enzyme-contg.; cloning, expression, purifn. and characterization of **pectate lyase** from *Bacillus* and its use in laundering and textile processing)
- IT Gene, microbial
  - RL: BSU (Biological study, unclassified); BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
  - (for **pectate lyase**; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Enzymes, preparation
  - RL: BPN (Biosynthetic preparation); CAT (Catalyst use); BIOL (Biological study); PREP (Preparation); USES (Uses)
  - (fusion products, of **pectate lyase** with cellulose-binding domain; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Detergents
  - (laundry, enzyme-contg.; cloning, expression, purifn. and characterization of **pectate lyase** from *Bacillus* and its use in laundering and textile processing)
- IT Fruit and vegetable juices
- Wine
  - (processing; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Digestion, chemical
  - (retting; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT Recycling
  - (wastepaper; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT 295371-03-8P 295371-04-9P, **Lyase, pectate** (*Bacillus* clone MB939)
  - RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
  - (amino acid sequence; cloning, expression, purifn., characterization and uses of **pectate lyase** from *Bacillus*)
- IT 9015-75-2P, **Pectate lyase**
  - RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)

(cloning, expression, purifn., characterization and uses of  
**pectate lyase** from *Bacillus*)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease  
9002-10-2, Phenoloxidase 9003-99-0, **Peroxidase** 9012-54-8,  
Cellulase 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase  
9032-08-0, Glucoamylase 9032-75-1, **Pectinase** 9033-35-6  
, **Pectin lyase** 9035-73-8, Oxidase 9037-80-3,  
Reductase 9067-74-7, Arabinosidase 9074-98-0, .beta.-Glucanase  
9075-68-7, Pullulanase 37278-89-0, Xylanase 37329-65-0,  
Cellobiohydrolase 39346-28-6, Galactanase 42613-30-9, Ligninase  
51377-41-4, Cutinase 60748-69-8, Mannanase 76901-10-5, Xyloglucanase  
80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0,  
Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase  
RL: CAT (Catalyst use); USES (Uses)

(compn. contg. **pectate lyase** and; cloning,  
expression, purifn., characterization and uses of **pectate  
lyase** from *Bacillus*)

IT 295371-01-6 295371-02-7  
RL: BSU (Biological study, unclassified); BUU (Biological use,  
unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)  
(nucleotide sequence; cloning, expression, purifn., characterization  
and uses of **pectate lyase** from *Bacillus*)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Kao Corporation; EP 0870834 A1 1998 HCAPLUS
- (2) Novo Nordisk AS; WO 9727290 A1 1997 HCAPLUS
- (3) Novo Nordisk AS; WO 9727291 A1 1997 HCAPLUS
- (4) Novo Nordisk AS; WO 9927083 A1 1999 HCAPLUS
- (5) Novo Nordisk AS; WO 9927084 A1 1999 HCAPLUS

L38 ANSWER 8 OF 31 HCAPLUS COPYRIGHT 2002 ACS

DUPLICATE 5

AN 2000:493650 HCAPLUS

DN 133:106620

TI **Detergent** compositions comprising a **pectate  
lyase** and a **bleach** booster

IN Showell, Michael Stanford; Zhu, Yong; Moese, Rosa Laura; Bettiol, Jean-Luc  
Philippe; Busch, Alfred

PA The Procter & Gamble Company, USA

SO PCT Int. Appl., 97 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C11D003-386

ICS C11D003-39; C11D003-28; C11D003-34

CC 46-5 (Surface Active Agents and **Detergents**)

FAN.CNT 7

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000042151	A1	20000720	WO 1999-US803	19990114
W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ,			
	CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR,			
	HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,			
	LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE,			
	SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW,			
	AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,			
	FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,			
	CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
AU 9924565	A1	20000801	AU 1999-24565	19990114
WO 2000042156	A1	20000720	WO 2000-US838	20000113

W: AE, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

EP 1141200 A1 20011010 EP 2000-904330 20000113

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

BR 2000007817 A 20011106 BR 2000-7817 20000113

PRAI WO 1999-US790 W 19990114

WO 1999-US800 W 19990114

WO 1999-US801 W 19990114

WO 1999-US802 W 19990114

WO 1999-US803 A 19990114

WO 2000-US838 W 20000113

OS MARPAT 133:106620

AB Detergent compns. comprise **pectate lyase**, **peroxygen** source, and 0.1-10% color-safe **bleach** booster for superior cleaning of fabrics and hard surfaces. An example granular **detergent** contained **pectate lyase** 0.1, sodium tripolyphosphate 22.0, sodium carbonate 45.0, sodium silicate 6.2, 1-(3,4-dihydroisoquinolinium)decanesulfate 0.4, Plurafac LF 404 0.5%, and the balance water.

ST **pectate lyase bleach** booster

**detergent**; imine **bleach** booster **detergent**;

dihydroisoquinolinium decanesulfate **bleach** booster

IT **Detergents**

(**detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT **Imines**

RL: MOA (Modifier or additive use); USES (Uses)

(**detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT **Detergents**

(dishwashing; **detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT **Bleaching agents**

(imine booster; **detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT **Detergents**

(laundry; **detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT 184770-71-6P, 3-(3,4-Dihydroisoquinolinium)propanesulfonate 205382-99-6P

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)

(**detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT 3230-65-7P, 3,4-Dihydroisoquinoline 117470-91-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)

(detergent compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT 64-04-0, Phenethylamine 1119-86-4, 1,2-Decanediol 1120-71-4, 1,3-Propanesultone  
 RL: RCT (Reactant)

(detergent compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT 9015-75-2, **Pectate lyase**  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (from bacillus agaradhaerens; **detergent** compns. comprising a **pectate lyase** and a **bleach** booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)


RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
 (1) Procter & Gamble; WO 9710323 A 1997 HCAPLUS  
 (2) Procter & Gamble; WO 9816614 A 1998 HCAPLUS  
 (3) The Procter & Gamble Co; WO 9806808 A 1998 HCAPLUS

L38 ANSWER 9 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 6

AN 2000:493648 HCAPLUS

DN 133:106610

TI Detergent compositions comprising a **pectate lyase** and a diacyl **peroxide**

IN Showell, Michael Stanford; Zhu, Yong; Wells, Eric; Moese, Rosa Laura 

PA The Procter & Gamble Company, USA

SO PCT Int. Appl., 84 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C11D003-386

ICS C11D003-39

CC 46-3 (Surface Active Agents and **Detergents**)

FAN.CNT 7

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000042149	A1	20000720	WO 1999-US801	19990114
W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9924563	A1	20000801	AU 1999-24563	19990114
WO 2000042156	A1	20000720	WO 2000-US838	20000113
W: AE, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1141200	A1	20011010	EP 2000-904330	20000113

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO

BR 2000007817 A 20011106 BR 2000-7817 20000113  
PRAI WO 1999-US790 W 19990114  
WO 1999-US800 W 19990114  
WO 1999-US801 A 19990114  
WO 1999-US802 W 19990114  
WO 1999-US803 W 19990114  
WO 2000-US838 W 20000113

AB The present invention relates to **detergent** compns. comprising a  
**pectate lyase** and a **diacyl peroxide**  
**bleach** system for superior cleaning performance.

ST **pectate lyase diacyl peroxide**  
**detergent**

IT **Peroxides**, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(acyl; **detergent** compns. comprising a **pectate**  
**lyase** and a **diacyl peroxide**)

IT **Detergents**

(**detergent** compns. comprising a **pectate**  
**lyase** and a **diacyl peroxide**)

IT 94-36-0, Dibenzoyl **peroxide**, uses 105-74-8, Dilauroyl  
**peroxide** 3034-79-5, Di(2-methyl benzoyl) **peroxide**  
9015-75-2, **Pectate lyase** 10484-48-7, Benzoyl  
succinyl **peroxide** 34414-98-7, Benzoyl glutaryl  
**peroxide**

RL: TEM (Technical or engineered material use); USES (Uses)  
(**detergent** compns. comprising a **pectate**  
**lyase** and a **diacyl peroxide**)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Bostick, J; US 5334326 A 1994 HCAPLUS
- (2) The Procter & Gamble Co; EP 0717102 A 1996 HCAPLUS
- (3) The Procter & Gamble Co; WO 9617921 A 1996 HCAPLUS
- (4) The Procter & Gamble Co; WO 9806808 A 1998 HCAPLUS
- (5) The Procter & Gamble Co; WO 9839402 A 1998 HCAPLUS
- (6) The Procter & Gamble Co; WO 9839403 A 1998 HCAPLUS
- (7) Unilever Nv; EP 0257700 A 1988 HCAPLUS

L38 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:909125 HCAPLUS

DN 134:68039

TI Pectin degrading enzymes from Bacillus licheniformis and their industrial  
applications

IN Andersen, Lene Nonboe; Schulein, Martin; Lange, Niels Erik Krebs;  
Bjornvad, Mads Eskelund; Schnorr, Kirk

PA Novo Nordisk A/S, Den.

SO U.S., 33 pp., Cont.-in-part of U. S. Ser. No. 73,684.

CODEN: USXXAM

DT Patent

LA English

IC C12N009-24; C12N009-88; D06M016-00

NCL 435200000

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 40, 46

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6165769	A	20001226	US 1998-198956	19981124
	US 6124127	A	20000926	US 1998-73684	19980506

- |  |            |    |          |                |          |
|--|------------|----|----------|----------------|----------|
|  | US 6187580 | B1 | 20010213 | US 1998-198955 | 19981124 |
|  | US 6280995 | B1 | 20010828 | US 2000-546500 | 20000411 |
|  | US 6284524 | B1 | 20010904 | US 2000-546762 | 20000411 |
- PRAI DK 1997-1344 A 19971124  
 US 1997-67240 P 19971202  
 US 1998-73684 A2 19980506  
 DK 1997-1343 A 19971124  
 US 1997-67249 P 19971202
- AB Pectin degrading enzymes derived from or endogeneous to *Bacillus licheniformis* or other *Bacillus* species which are at least 99% homologous to *Bacillus licheniformis* based on aligned 16S rDNA sequences have optimum activity at pH higher than 8. The pectin degrading enzymes belong to the enzyme classes **pectate lyases** (EC 4.2.2.2), **pectin lyases** (EC 4.2.2.10) and polygalacturonases (EC 3.2.1.15) and are useful in industrial processes under alk. conditions such as in textile processing, wine or juice processing, and as an active ingredient in laundry **detergents** and hard surface cleaning products. Gene and deduced amino acid sequences are provided for two **pectate lyases**, a **pectin lyase**, and a polygalacturonase.
- ST *Bacillus* pectin degrading enzyme gene sequence; **lyase** **pectin pectate** gene sequence *Bacillus*; polygalacturonase gene sequence *Bacillus*; **detergent** textile wine juice processing pectin degrading enzyme
- IT Fibers  
 RL: PEP (Physical, engineering or chemical process); PROC (Process) (cellulosic; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Plant (Embryophyta)  
 (degrdn. or modification of plant material; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Cellulose pulp  
 (degrdn. or modification of; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Cleaning solvents  
**Detergents**  
 Scouring agents  
 (enzyme-contg.; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT **Detergents**  
 (laundry, enzyme-contg.; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT *Bacillus licheniformis*  
 DNA sequences  
 Feed additives  
 Molecular cloning  
 Nonwoven fabrics  
 Nucleic acid hybridization  
 Protein sequences  
 Textiles  
 Yarns  
 (pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Gene, microbial  
 RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)  
 (pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Enzymes, biological studies  
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed



- use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(pectolytic; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Fruit and vegetable juices  
Wine  
(processing of; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Digestion, chemical  
(retting; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT Paper  
(wastepaper, degrading or modification of; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT 9015-75-2P, **Pectate lyase**  
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(isoenzymes; **pectin** degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT 9032-75-1P, Polygalacturonase **9033-35-6P, Pectin lyase** 226081-94-3P 226081-98-7P 226082-00-4P 226082-02-6P  
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(**pectin** degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT 226081-89-6 226081-91-0 226081-93-2 226081-95-4  
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)  
(pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease  
9002-10-2, Phenol oxidase 9003-99-0, **Peroxidase** 9012-54-8,  
Cellulase 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase  
9032-08-0, Glucoamylase 9035-73-8, Oxidase 9037-80-3, Reductase  
9067-74-7, Arabinosidase 9074-98-0, .beta.-Glucanase 9075-68-7,  
Pullulanase 37278-89-0, Xylanase 37329-65-0, Cellobiohydrolase  
39346-28-6, Galactanase 42613-30-9, Ligninase 51377-41-4, Cutinase  
60748-69-8, Mannanase 74191-29-0, Endoglucanase 76901-10-5,  
Xyloglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase  
131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase  
RL: CAT (Catalyst use); FFD (Food or feed use); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)  
(prepn. contg.; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT 261154-33-0, 15: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-34-1, 16:  
PN: WO0164853 PAGE: 59 unclaimed DNA 261154-35-2, 17: PN: WO0164853  
PAGE: 59 unclaimed DNA 261154-36-3, 18: PN: WO0164853 PAGE: 59 unclaimed  
DNA 261154-37-4, 19: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-38-5,  
20: PN: WO0164853 PAGE: 59 unclaimed DNA 313083-53-3 313083-54-4  
314327-86-1, 1: PN: US6165769 SEQID: 9 unclaimed DNA 314327-88-3  
314327-89-4 314327-90-7 314327-91-8 314327-92-9 314327-93-0  
314327-94-1  
RL: PRP (Properties)  
(unclaimed nucleotide sequence; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)
- IT 314327-87-2  
RL: PRP (Properties)  
(unclaimed protein sequence; pectin degrading enzymes from *Bacillus*

licheniformis and their industrial applications)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Anon; JP 56068393
- (2) Anon; EP 0683228 A2 1995 HCAPLUS
- (3) Anon; EP 0870834 A1 1998 HCAPLUS
- (4) Anon; WO 9845393 1998 HCAPLUS
- (5) Godfrey; J of Applied Bacteriology 1994, V76, P13 HCAPLUS
- (6) Karbassi; Can J Microbiol 1980, V26, P377 HCAPLUS
- (7) Kelly; Can J Microbiol 1978, V24, P1164 HCAPLUS
- (8) Nasser; Biochimie 1990, V72, P689 HCAPLUS
- (9) Sakamoto; FEBS Letters 1996, V398, P269 HCAPLUS
- (10) Stn International; HCAPLUS
- (11) Yoshimitsu, M; Agric Biol Chem 1991, V55(1), P25

L38 ANSWER 11 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2001-041149 [05] WPIX

DNC C2001-011996

TI Novel endo-beta-1,4-glucanase useful in various industrial applications including degradation of cellulose-containing biomass, **detergent**, paper, pulp and textile industries.

DC B04 D16

IN BJORNVAD, M E; SCHUELEIN, M

PA (NOVO) NOVOZYMES AS; (NOVO) NOVO NORDISK AS

CYC 92

PI WO 2000073428 A1 20001207 (200105)\* EN 51p C12N009-42

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ  
EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK  
LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG  
SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000047449 A 20001218 (200118) C12N009-42

ADT WO 2000073428 A1 WO 2000-DK278 20000524; AU 2000047449 A AU 2000-47449 20000524

FDT AU 2000047449 A Based on WO 200073428

PRAI DK 1999-755 19990528

IC ICM C12N009-42

ICS C12N001-20

AB WO 200073428 A UPAB: 20010124

NOVELTY - An enzyme (I) exhibiting endo- beta -1,4-glucanase activity (EC 3.2.1.4) which is encoded by the DNA sequence (II) given in the specification, is new.

DETAILED DESCRIPTION - An enzyme (I) exhibits endo- beta -1,4-glucanase activity (EC 3.2.1.4) and is encoded by the DNA sequence (II) with nucleotide positions 76-1455 of sequence (S1) of 1941 base pairs (bp) given in the specification and has a protein sequence with at least 75% identity to positions 26-485 of a sequence (S2) of 646 amino acids given in the specification. Where the identity is determined by GAP provided in the GCG program package using a GAP creation penalty of 3 and GAP extension penalty of 0.1. (I) is encoded by the endoglucanase encoding portion of the DNA sequence obtainable from the plasmid in Escherichia coli DSM 12805 and is produced by culturing a cell comprising (II).

INDEPENDENT CLAIMS are also included for the following:

- (1) an isolated polynucleotide molecule (its complement, species analog or degenerate nucleotide sequence) encoding (I);
- (2) an expression vector (III) comprising a transcription promoter, a DNA segment of a polynucleotide encoding (I) and a transcription terminator;
- (3) a cultured cell (IV) into which (III) has been introduced;

(4) preparation (V) of (I);  
 (5) an enzyme composition (VI) comprising (I);  
 (6) an isolated enzyme having endo- beta -1,4-glucanase activity which is free from homologous inhibitors that is produced by (V); and  
 (7) an isolated substantially pure biological culture of the strain E. coli DSM 12805.

USE - (I) and (VI) are useful for degradation of cellulose-containing biomass (claimed) and also in **detergent**, paper and pulp, oil drilling, oil extraction, wine and juice, food ingredients, animal feed or textile industries, in treatment of wooden pulp, for debarking, defibration, fiber modification, bio-polishing process and for improving drainability of paper making pulps. (I) is further useful in **detergent** compositions for house-hold or industrial laundering of textiles and garments. Polynucleotides encoding (I) are useful as a tool to identify other homologous endoglucanases.

ADVANTAGE - (I) has a high specific activity on carboxy methyl cellulose (CMC) and, in contrast to other endoglucanases, the enzyme is able to degrade highly crystalline cellulose. The optimal temperature of the enzyme is at 60 deg. C and is fully active between pH 5.5 and 9.5. The enzyme can be used for total biomass degradation, which normally would need both cellobiohydrolase(s) (which has very little activity on CMC) and endoglucanase(s).

Dwg.0/0

FS

CPI

FA

AB; DCN

MC

CPI: B04-E03E; B04-E08; B04-F10A3E; B04-F10A6E; B04-F10B1E; B04-F10B4E;  
 B04-F10B5E; B04-L01; B04-L05B; B04-L05B0E; D05-H04; D05-H12A;  
 D05-H12E; D05-H14A1; D05-H17A3

L38 ANSWER 12 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2000-565292 [52] WPIX

DNC C2000-168359

TI Novel methods for modifying animal feed using galactanase and novel galactanase enzymes useful for modifying animal feed.

DC C06 D13 D16

IN BECH, L; BJORNVAD, M E; CLAUSEN, I G; OSTERGAARD, P R; SCHUELEIN, M; SJOHOLM, C; BJOERNVAD, M E; OESTERGAARD, P R; SJOEHOLM, C

PA (NOVO) NOVO NORDISK AS; (NOVO) NOVOZYMES AS

CYC 90

PI WO 2000047711 A2 20000817 (200052)\* EN 76p C12N000-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL  
 OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES  
 FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS  
 LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL  
 TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000025356 A 20000829 (200062) C12N000-00

US 6331426 B1 20011218 (200205) C12P021-06

ADT WO 2000047711 A2 WO 2000-DK52 20000208; AU 2000025356 A AU 2000-25356  
 20000208; US 6331426 B1 Provisional US 1999-125885P 19990324, Provisional  
 US 1999-138445P 19990610, US 2000-502653 20000211

FDT AU 2000025356 A Based on WO 200047711

PRAI DK 1999-799 19990607; DK 1999-184 19990211

IC ICM C12N000-00; C12P021-06

ICS C12N009-00; C12N009-24; C12N009-26

AB WO 200047711 A UPAB: 20001018

NOVELTY - Modifying animal feed comprising adding at least 1 galactanase enzyme comprising at least 1 of 6 consensus sequences ((I)-(VI)) of 8-42 amino acids (aa), given in the specification, is new.

DETAILED DESCRIPTION - Novel method for modifying animal feed

comprising adding at least 1 galactanase enzyme comprising at least 1 of 6 consensus sequences ((I)-(VI)) of 8-42 aa, given in the specification.

E.g.:

Tyr-Xaa-Xaa-Thr-Xaa-Glu-Xaa-Xaa-Asp-Gly (I);  
 Asn-Xaa-Xaa-(Met/Leu)-Phe-Asp-Phe-Xaa-Gly-Xaa-Xaa-Leu-Xaa-Ser (II);  
 Ser-Tyr-Tyr-Pro-Xaa-Trp-His-Gly (III);  
 Tyr-Asp-(Ser/Ala)-Asn-Gly-Asn-Sly-Tyr-Gly-Gly (IV); and  
 Gly-Gly-(Phe/Leu)-Ala-Gly-Glu-Thr-Asp (VI).  
 Xaa = any amino acid.

INDEPENDENT CLAIMS are also included for the following:

(1) modifying animal feed comprising adding at least galactanase enzyme comprising:

(i) an enzyme produced by *Bacillus circulans* (a sequence of 252 aa given in the specification; (VII)) or *B. agaradhaerens* (a sequence of 245 aa given in the specification; (VIII));

(ii) an enzyme produced by *B. subtilis* (a sequence of 297 aa given in the specification; (IX)) or *B. lichenformis* (a sequence of 399 aa given in the specification; (X)); or

(iii) a sequence with at least 70 % homology to the enzyme of (1.i) or (1.ii), or derived from the enzyme;

(2) modifying animal feed comprising adding at least galactanase enzyme comprising:

(i) an enzyme encoded by a sequence with at least 60 % homology to the sequence from *B. circulans* (756 base pairs (bp) given in the specification; (XI)) or *B. agaradhaerens* (735 bp given in the specification; (XII));

(ii) an enzyme encoded by a sequence with at least 75 % homology to the sequence from *B. subtilis* (891 bp given in the specification; (XIII) - corrected from the claims, Ed) or *B. lichenformis* (1200 bp given in the specification; (XIV));

(3) modifying animal feed comprising adding at least 1 galactanase encoded by a sequence that hybridizes to (XI)-(XIV);

(4) obtaining at least a part of a DNA sequence encoding a galactanase comprising detecting the sequence using a probe comprising at least 16 nucleotides from 1 of 6 sequences of 24-129 bp ((XV)-(XX));

(5) a polynucleotide comprising:

(i) a sequence as in (XII);

(ii) a polynucleotide that encodes a polypeptide with at least 70 % identity to (VIII); and

(iii) degenerate sequences of (5.i) and (5.ii);

(6) a polynucleotide comprising:

(i) a sequence as in (XIV);

(ii) a polynucleotide that encodes a polypeptide with at least 70 % identity to (X); and

(iii) degenerate sequences of (6.i) and (6.ii);

(7) an expression vector comprising a sequence as in (5) or (6);

(8) a cell comprising the vector of (7);

(9) producing a galactanase active peptide comprising culturing a cell as in (8) and recovering the peptide;

(10) a galactanase active peptide comprising a sequence that is at least 80 % identical to residues 1-399 of (X);

(11) a galactanase active peptide comprising a sequence that is at least 80 % identical to residues 1-245 of (VIII); and

(12) an enzyme composition comprising a purified polypeptide as in (10) or (11).

E.g.:

TA(C/T) NCN (T/C) (A/G)N ACN N(C/T) (T/G) GA(G/A) (G/C)AN (G/C) (G/C)N  
 GA(T/C) GGN (XV)

TCN TAT TAT CCN TNN TGG NCA TGG (XVII)

TAT GAT (T/G)C(A/C) AA(T/C) GGC AAC GG(G/C) TA(T/C) GG(A/C) (XVIII)

GG(A/G) GG(A/C) (T/C)TT GCC GGT GA(A/G) AC(T/G) GAT (XX)

N = any nucleotide.

USE - The galactanase enzymes are useful for the modification of animal feed (claimed) and in the textile, detergent, wine and juice and cellulose processing industries.

ADVANTAGE - The enzymes obtained and produced have high galactanase activity. Galactanase containing animal feeds have an enhanced nutritional value.

Dwg.0/1

FS CPI

FA AB; DCN

MC CPI: C04-C01B; C04-C01C; C04-C01G; C04-E02E; C04-E03E; C04-E05; C04-E08; C04-F0100E; C04-L05A; C04-N03A; C11-A02; D03-G02; D03-G04; D05-A02C; D05-C03C; D05-H12A; D05-H12B; D05-H12D1; D05-H12E; D05-H14; D05-H17A3; D05-H17B3

L38 ANSWER 13 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2000-505754 [45] WPIX

CR 2000-482817 [41]; 2000-482819 [41]; 2000-482820 [41]; 2000-482821 [41]; 2000-499111 [41]; 2000-499112 [41]; 2000-543165 [41]; 2000-543166 [41]

DNC C2000-151754

TI **Detergent** composition useful in laundry, dish washing and/or hard surface cleaning comprises a **pectate lyase** and a bleach system.

DC A97 D16 D25 E12 E14 E19

IN BETTIOL, J P; BUSCH, A; MOESE, R L; SHOWELL, M S; WELLS, E C; ZHU, Y

PA (PROC) PROCTER & GAMBLE CO

CYC 91

PI WO 2000042156 A1 20000720 (200045)\* EN 136p C11D003-386

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL  
OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES  
FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS  
LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL  
TJ TM TR TT UA UG US UZ VN YU ZA ZW

AU 2000026105 A 20000801 (200054) C11D003-386

EP 1141200 A1 20011010 (200167) EN C11D003-386

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
RO SE SI

BR 2000007817 A 20011106 (200175) C11D003-386

ADT WO 2000042156 A1 WO 2000-US838 20000113; AU 2000026105 A AU 2000-26105  
20000113; EP 1141200 A1 EP 2000-904330 20000113, WO 2000-US838 20000113;  
BR 2000007817 A BR 2000-7817 20000113, WO 2000-US838 20000113

FDT AU 2000026105 A Based on WO 200042156; EP 1141200 A1 Based on WO  
200042156; BR 2000007817 A Based on WO 200042156

PRAI WO 1999-US803 19990114; WO 1999-US790 19990114; WO 1999-US800  
19990114; WO 1999-US801 19990114; WO 1999-US802 19990114

IC ICM C11D003-386

ICS C11D003-28; C11D003-34; C11D003-39

AB WO 200042156 A UPAB: 20020114

NOVELTY - A **detergent** composition comprises a **pectate lyase** (1) and a bleach system (2). (2) is a metal bleach catalyst (3), a combination of a **peroxygen** source (4) and a bleach booster (5) and/or a diacyl **peroxide** (6). (5) is zwitterionic imines and/or anionic imine polyions having a net negative charge from -1 to -3.

USE - In removal of plant- and dirt-based stains, highly colored food soils/stains, body soils, for superior fabric whiteness maintenance, for removal of highly colored stains and soils from plastic ware, and/or for preventing the staining and/or discoloration of dish ware by highly

colored components (claimed).

ADVANTAGE - The compositions provide superior cleaning performance, especially on plant- and dirt-based stains, highly colored food soils/stains and body soils, and superior whiteness maintenance. The color-safe booster in the composition provide superior cleaning performance in lower water temperatures while providing improved color-safety profiles. The diacyl **peroxide** in the composition is effective for highly colored stains and soils removal from plastic ware, and further prevents the staining/discoloration of the dish ware by highly colored components.

Dwg.0/0

FS CPI

FA AB; DCN

MC CPI: A12-W12A; A12-W12B; D03-D01A; D11-B01; D11-B02; E05-L02B; E05-L03A; E06-D; E06-D02; E06-H; E07-D; E07-H; E10-A04B; E10-A09A; E10-A09B7; E10-A22A; E10-A22D; E10-B01C; E31-E; N05-B; N05-C

L38 ANSWER 14 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2000-499111 [44] WPIX

CR 2000-482817 [41]; 2000-482819 [41]; 2000-482820 [41]; 2000-482821 [41]; 2000-499112 [41]; 2000-505754 [41]; 2000-543165 [41]; 2000-543166 [41]

DNC C2000-149767

TI **Detergent** composition useful in cleaning fabric, dish ware and/or hard surfaces comprises a **pectate lyase** and a metal bleach catalyst.

DC A97 D16 D25 E12 E14 E19

IN BETTIOL, J P; BUSCH, A; MOESE, R L; SHOWELL, M S; WELLS, E C; ZHU, Y; WELLS, E

PA (PROC) PROCTER & GAMBLE CO

CYC 84

PI WO 2000042150 A1 20000720 (200044)\* EN 104p C11D003-386

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL  
OA PT SD SE SZ UG ZW

W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD  
GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV  
MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT  
UA UG US UZ VN YU ZW

AU 9924564 A 20000801 (200054) C11D003-386

BR 2000007817 A 20011106 (200175) C11D003-386

ADT WO 2000042150 A1 WO 1999-US802 19990114; AU 9924564 A AU 1999-24564  
19990114; WO 1999-US802 19990114; BR 2000007817 A BR 2000-7817 20000113,  
WO 2000-US838 20000113

FDT AU 9924564 A Based on WO 200042150; BR 2000007817 A Based on WO 200042156

PRAI WO 1999-US802 19990114; WO 1999-US790 19990114; WO 1999-US800  
19990114; WO 1999-US801 19990114; WO 1999-US803 19990114

IC ICM C11D003-386

ICS C11D003-28; C11D003-34; C11D003-39

AB WO 200042150 A UPAB: 20011220

NOVELTY - A **detergent** composition comprises a **pectate lyase**(1) and a metal bleach catalyst (2).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a method of cleaning a fabric, dish ware and/or hard surface

USE - In cleaning a fabric, dish ware and/or hard surface.

ADVANTAGE - The compositions provide superior cleaning due to synergistic effect, providing cleaning, stain removal, and whiteness maintenance. The composition also delivers outstanding cleaning effect, especially on food colored stains and body soils.

Dwg.0/0

FS CPI

FA AB; DCN

MC CPI: D05-H17A3; D05-H17B3; D11-B01D; D11-B02; D11-D01A; D11-D01B;  
E05-L02B; E05-L03A; N05-A; N05-B

L38 ANSWER 15 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2000-329163 [28] WPIX

DNC C2000-099801

TI New modified polypeptides having an attached polymer for reducing immune responses, useful in e.g. **detergents**, cleaning products, skin care products, food or feed products, textile products or pharmaceuticals.

DC A96 B04 D13 D16 D21 D25 F06

IN ANDERSEN, K V; ERNST, S; OLSEN, A A; ROGGEN, E L; VON DER OSTEN, C

PA (NOVO) NOVO-NORDISK AS; (NOVO) NOVOZYMES AS

CYC 90

PI WO 2000022103 A1 20000420 (200028)\* EN 107p C12N009-96

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL

OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES

FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS

LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL

TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 9960788 A 20000501 (200036) C12N009-96

EP 1121424 A1 20010808 (200146) EN C12N009-96

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT

RO SE SI

ADT WO 2000022103 A1 WO 1999-DK542 19991012; AU 9960788 A AU 1999-60788

19991012; EP 1121424 A1 EP 1999-947261 19991012, WO 1999-DK542 19991012

FDT AU 9960788 A Based on WO 200022103; EP 1121424 A1 Based on WO 200022103

PRAI DK 1999-1418 19991004; DK 1998-1301 19981013

IC ICM C12N009-96

ICA A61K047:48; C11D003-386

ICI A61K047:48; C11D003-386

AB WO 200022103 A UPAB: 20000613

NOVELTY - A polypeptide with reduced immune response, having one or more modified amino acids, where the C alpha -atoms of the amino acids are located less than 15 Angstrom from a ligand bound to the polypeptide, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a method for preparing polypeptides with reduced immune response comprising:

(a) identifying amino acid residues located on the surface of the 3-dimensional structure of a parent polypeptide;

(b) selecting target amino acid residues on the surface of the 3-dimensional structure of the parent polypeptide to be modified;

(c) substituting one or more amino acid residues selected in (b) with other amino acid residues; and/or

(d) coupling polymeric molecules to the amino acid residues of (b) and/or (c); and

(2) a composition comprising the novel modified polypeptide, and ingredients used in industrial products, or pharmaceuticals.

USE - The modified polypeptides can be used for reducing the allergenicity of industrial products, e.g. a **detergent** such as a laundry, dish wash or hard surface cleaning product, including bio-film products or a food or feed product or a textile product (claimed). They can also be used in personal care products, particularly skin care products (claimed). The modified polypeptides can also be used for reducing the immunogenicity of pharmaceuticals (claimed).

ADVANTAGE - The modified polypeptides have reduced immunogenicity or allergenicity while maintaining a high percentage of activity.

Dwg.0/2

FS CPI  
 FA AB; DCN  
 MC CPI: A12-V01; A12-V04; A12-W09; B04-L01; B04-L03; B04-L04; B04-L05;  
 B04-L06; B04-L07; B04-N04; D03-H01T2; D05-H; D08-B09A; D11-B02;  
 F03-C; F03-J03

L38 ANSWER 16 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 7  
 AN 1999:64911 HCAPLUS  
 DN 130:121426  
 TI Alkaline xyloglucanases from Bacillus suitable for fabric  
**detergents**  
 IN Schulein, Martin; Outtrup, Helle; Jorgensen, Per Lina; Bjornvad, Mads  
 Eskelund  
 PA Novo Nordisk A/S, Den.  
 SO PCT Int. Appl., 87 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C12N009-42  
 ICS C12N009-42; C12R001-07  
 CC 7-2 (Enzymes)  
 Section cross-reference(s): 3, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9902663	A1	19990121	WO 1998-DK290	19980701
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9879085	A1	19990208	AU 1998-79085	19980701
EP 1002060	A1	20000524	EP 1998-929246	19980701
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
BR 9810548	A	20000815	BR 1998-10548	19980701
JP 2001509377	T2	20010724	JP 2000-502161	19980701
US 6268197	B1	20010731	US 1998-110959	19980707
PRAI DK 1997-822	A	19970707		
DK 1997-1213	A	19971024		
US 1997-54039	P	19970728		
US 1997-63694	P	19971028		
WO 1998-DK290	W	19980701		

AB A xyloglucanase having a relative xyloglucanase activity of .gtoreq.50% at pH 7 and either no or an insignificant cellulolytic activity is obtainable e.g. from a strain of Bacillus. The xyloglucanase may comprise an amino acid sequence of the mature enzymes isolated from B. licheniformis ATCC 14580 or B. agaradhaerens NCIMB 40482. Genes encoding the xyloglucanases were isolated and sequenced from the 2 Bacillus strains. The xyloglucanases are useful e.g. in cleaning compns. and for treatment of cellulosic fibers.

ST xyloglucanase cloning gene sequence **detergent** Bacillus

IT Bacillus (bacterium genus)  
 Bacillus agaradhaerens  
 Bacillus licheniformis  
 Bacteria (Eubacteria)  
 Fungi  
 Gram-positive bacteria (Firmicutes)



Laundry **detergents**

Microorganism

Molecular cloning

Protein fermentation

Yeast

(alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT Genes (microbial)

RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);  
PRP (Properties); BIOL (Biological study); PREP (Preparation)(alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT Bacteria (Eubacteria)

(alkalophilic; alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT DNA sequences

(of alk. xyloglucanase genes from Bacillus)

IT Protein sequences

(of alk. xyloglucanases from Bacillus)

IT Fabrics

Flax

Hemp (fiber)

Jute fabrics

Linen fabrics

(treatment of; alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT Cellulosic fibers

RL: BPR (Biological process); BIOL (Biological study); PROC (Process)

(treatment of; alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT 9004-32-4 9004-34-6, Avicel, biological studies

RL: BPR (Biological process); BIOL (Biological study); PROC (Process)

(activity on; alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT 76901-10-5P, Xyloglucanase

RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or  
additive use); PRP (Properties); BIOL (Biological study); PREP

(Preparation); USES (Uses)

(alk. xyloglucanases from Bacillus suitable for fabric  
**detergents**)

IT 219853-32-4P 219853-34-6P 219853-74-4P

RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or  
additive use); PRP (Properties); BIOL (Biological study); PREP

(Preparation); USES (Uses)

(amino acid sequence; alk. xyloglucanases from Bacillus suitable for  
fabric **detergents**)

IT 219853-30-2P 219853-31-3P 219853-33-5P

RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified);

PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)

(nucleotide sequence; alk. xyloglucanases from Bacillus suitable for  
fabric **detergents**)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Proteinase

9002-10-2, Phenol oxidase 9003-99-0, Peroxidase 9012-54-8,

Cellulase 9015-75-2, Pectate lyase

9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase 9032-08-0,

Glucosylase 9032-75-1, Polygalacturonase 9033-35-6,

Pectin lyase 9035-73-8, Oxidase 9037-80-3, Reductase

9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0,

Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase

51377-41-4, Cutinase 60748-69-8, Mannanase 80146-85-6,

Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase  
132965-81-2, Pectin acetyl esterase

RL: MOA (Modifier or additive use); USES (Uses)

(textile treatment compn. contg.; alk. xyloglucanases from Bacillus  
suitable for fabric **detergents**)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ajinomoto Co Inc; JP 50-68549 A 1993
- (2) Genencor International, Inc; WO 9634092 A2 1996 HCAPLUS
- (3) MacLachlan, G; Aust J Plant Physiol 1992, V19, P137 HCAPLUS
- (4) Rejon-Palomares, A; Symbiosis 1996, V21, P249 HCAPLUS
- (5) Unilever Plc; WO 9317101 A1 1993 HCAPLUS

L38 ANSWER 17 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:795986 HCAPLUS

DN 132:46956

TI Bacterial mannanases and their gene sequence and industrial applications

IN Kauppinen, Markus Sakari; Schulein, Martin; Schnorr, Kirk; Andersen, Lene  
Nonboe; Bjornvad, Mads Eskelund

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 242 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q

CC 7-5 (Enzymes)

Section cross-reference(s): 3, 10, 40, 46, 51

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9964619	A2	19991216	WO 1999-DK314	19990610
	WO 9964619	A3	20000302		
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	BR 9911086	A	20010220	BR 1999-11086	19990610
	EP 1086211	A2	20010328	EP 1999-955504	19990610
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI			
PRAI	US 1998-111256	A	19980610		
	DK 1998-1340	A	19981020		
	DK 1998-1341	A	19981020		
	US 1998-105970	P	19981028		
	US 1998-106054	P	19981028		
	DK 1998-1725	A	19981223		
	DK 1999-306	A	19990305		
	DK 1999-307	A	19990305		
	DK 1999-308	A	19990305		
	DK 1999-309	A	19990305		
	US 1999-123543	P	19990309		
	US 1999-123623	P	19990310		
	US 1999-123641	P	19990310		
	US 1999-123642	P	19990311		
	WO 1999-DK314	W	19990610		

- AB Novel mannanases comprising an amino acid sequence such as that comprising positions 31-330 of the  $\beta$ -1,4-mannanase from *Bacillus* sp. I633, or their homologs or encoded by polynucleotide mols. that encode a polypeptide that is at least 65% identical to the the *Bacillus* I633 amino acid sequence are provided. Mannanases and their genes are also provided from *Bacillus* sp. AAI12, *B. agaradhaerens*, *B. halodurans*, *Bacillus* sp. AA349, *B. clausii*, *B. licheniformis*, *Humicola insolens*, and *Caldicellulosiruptor*. The mannanases are alk. and are useful e.g. in cleaning comps., in a fracturing fluid useful to fracture a subterranean formation (oil drilling), for modifying plant material, and for treatment of cellulosic fibers and fabrics.
- ST mannanase gene sequence *Bacillus* *Humicola* *Caldicellulosiruptor*; cleaning compn bacterial mannanase; fabric fiber treatment mannanase; oil drilling fracture mannanase; **detergent** mannanase
- IT *Bacillus* (bacterium genus)  
*Bacillus* *agaradhaerens*  
*Bacillus* *clausii*  
*Bacillus* *halodurans*  
*Bacillus* *licheniformis*  
*Bacteria* (Eubacteria)  
*Caldicellulosiruptor*  
**Detergents**  
Fabric softeners  
Filamentous fungi  
*Humicola insolens*  
Molecular cloning  
Yeast  
(bacterial mannanases and their gene sequence and industrial applications)
- IT Gene, microbial  
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(bacterial mannanases and their gene sequence and industrial applications)
- IT Coffee products  
(beverages, processing of exts. of; bacterial mannanases and their gene sequence and industrial applications)
- IT Fibers  
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)  
(cellulosic, treatment of; bacterial mannanases and their gene sequence and industrial applications)
- IT **Detergents**  
(dishwashing; bacterial mannanases and their gene sequence and industrial applications)
- IT Enzymes, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(enzyme compn. contg.; bacterial mannanases and their gene sequence and industrial applications)
- IT **Detergents**  
(laundry; bacterial mannanases and their gene sequence and industrial applications)
- IT DNA sequences  
(of bacterial mannanase genes)
- IT Protein sequences  
(of bacterial mannanases)
- IT Enzymes, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(pectinolytic, enzyme compn. contg.; bacterial mannanases and their gene sequence and industrial applications)
- IT *Aspergillus niger*

- Aspergillus oryzae  
 Bacillus subtilis  
 Escherichia coli  
 (recombinant expression host; bacterial mannanases and their gene sequence and industrial applications)
- IT Cellulose pulp  
 Textiles  
 Yarns  
 (treatment of; bacterial mannanases and their gene sequence and industrial applications)
- IT Synthetic fibers  
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)  
 (treatment of; bacterial mannanases and their gene sequence and industrial applications)
- IT Recycling  
 (wastepaper; bacterial mannanases and their gene sequence and industrial applications)
- IT 252726-46-8P 252726-48-0P 252726-50-4P 252726-52-6P 252726-53-7P  
 252726-57-1P 252726-59-3P 252726-60-6P 252726-62-8P 252726-63-9P  
 252726-65-1P 252726-66-2P 252726-68-4P 252726-69-5P 252726-70-8P  
 252726-73-1P 252726-75-3P 252726-77-5P 252726-79-7P 252726-81-1P  
 252726-83-3P 252726-85-5P 252726-88-8P 252726-90-2P 252726-93-5P  
 252727-00-7P 252727-05-2P 252727-07-4P  
 RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified);  
 CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (amino acid sequence; bacterial mannanases and their gene sequence and industrial applications)
- IT 37288-54-3P, Endo- $\beta$ -1,4-mannanase  
 RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified);  
 NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study);  
 PREP (Preparation); USES (Uses)  
 (bacterial mannanases and their gene sequence and industrial applications)
- IT 9000-90-2,  $\alpha$ -Amylase 9000-92-4, Amylase 9001-62-1, Lipase  
 9001-92-7, Proteinase 9002-10-2, Phenol oxidase 9003-99-0,  
**Peroxidase 9015-75-2, Pectate lyase**  
 9025-56-3, Hemicellulase 9025-98-3, Pectin methyl esterase 9032-08-0,  
 Glucoamylase 9032-75-1, Pectinase **9033-35-6, Pectin**  
**lyase** 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0,  
 $\beta$ -Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase  
 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase 51377-41-4,  
 Cutinase 76901-10-5, Xyloglucanase 80146-85-6, Transglutaminase  
 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2,  
 Pectin acetyl esterase  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (enzyme compn. contg.; bacterial mannanases and their gene sequence and industrial applications)
- IT 252726-45-7P 252726-47-9P 252726-49-1P 252726-51-5P 252726-54-8P  
 252726-58-2P 252726-61-7P 252726-64-0P 252726-67-3P 252726-71-9P  
 252726-72-0P 252726-74-2P 252726-76-4P 252726-78-6P 252726-80-0P  
 252726-82-2P 252726-84-4P 252726-87-7P  
 RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);  
 PRP (Properties); BIOL (Biological study); PREP (Preparation)  
 (nucleotide sequence; bacterial mannanases and their gene sequence and industrial applications)
- IT 9000-30-0, Guar gum 9000-40-2, Locust bean gum  
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)  
 (treatment of; bacterial mannanases and their gene sequence and industrial applications)

IT 250295-03-5, 21: PN: WO9957255 PAGE: 46 unclaimed DNA 250295-04-6, 22:  
 PN: WO9957255 PAGE: 46 unclaimed DNA 250295-05-7, 23: PN: WO9957255  
 PAGE: 46 unclaimed DNA 250295-07-9, 24: PN: WO9957255 PAGE: 46 unclaimed  
 DNA 250295-08-0, 25: PN: WO9957255 PAGE: 47 unclaimed DNA 250295-09-1,  
 26: PN: WO9957255 PAGE: 47 unclaimed DNA 252741-21-2 252741-22-3  
 252741-23-4, 42: PN: WO9964619 PAGE: 97 unclaimed DNA 252741-24-5, 43:  
 PN: WO9964619 PAGE: 97 unclaimed DNA 252741-25-6, 44: PN: WO9964619  
 PAGE: 99 unclaimed DNA 252741-26-7 252741-27-8 252741-28-9  
 252741-29-0 252741-30-3 252741-31-4 252741-32-5 252741-33-6  
 252741-34-7 252741-37-0

RL: PRP (Properties)

(unclaimed nucleotide sequence; bacterial mannanases and their gene  
 sequence and industrial applications)

IT 252636-25-2 252636-26-3 252636-27-4 252636-28-5

RL: PRP (Properties)

(unclaimed sequence; bacterial mannanases and their gene sequence and  
 industrial applications)

L38 ANSWER 18 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:795946 HCAPLUS

DN 132:32683

TI Cloning, sequence, purification and industrial application of mannanase of  
 Bacillus subtilis

IN Sreekrishna, Kotikanyadanam; Johnstone, Kevin; Saunders, Charles; Bettiol,  
 Jean-luc

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 56 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

CC 7-5 (Enzymes)

Section cross-reference(s): 3, 10, 17, 43, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9964573	A1	19991216	WO 1999-DK299	19990607
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6060299	A	20000509	US 1998-95163	19980610
AU 9942562	A1	19991230	AU 1999-42562	19990607
EP 1086210	A1	20010328	EP 1999-955498	19990607
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
PRAI US 1998-95163	A	19980610		
WO 1999-DK299	W	19990607		

AB DNA sequence encoding mannanase (EC 3.2.1.78) of Bacillus subtilis strain 168 and deduced amino acid sequence are disclosed. Prodn., purifn. and properties of the mannanase are reported. The mannanase is useful in cleaning or **detergent** comps., for modifying plant material, and for treatment of cellulosic fibers.

ST Bacillus mannanase gene sequence **detergent** paper textile

IT Surfactants

- (anionic; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Coffee products  
(beverages; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Surfactants  
(cationic; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Fibers  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(cellulosic; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Bacillus (bacterium genus)  
Bacillus subtilis  
Bleaching agents  
Cellulose pulp  
DNA sequences  
Detergent builders  
Fabric softeners  
Molecular cloning  
Protein sequences  
Textiles  
Yarns  
(cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Antibodies  
RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Synthetic fibers  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Detergents  
(enzyme-contg.; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Plant (Embryophyta)  
(material; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Surfactants  
(nonionic; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Enzymes, uses  
RL: CAT (Catalyst use); USES (Uses)  
(pectin-degrading; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Paper  
(wastepaper; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT Gene, microbial  
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)  
(ydhT; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)
- IT 252307-20-3P  
RL: CAT (Catalyst use); PRP (Properties); PUR (Purification or recovery); PREP (Preparation); USES (Uses)  
(amino acid sequence; cloning, sequence, purifn. and industrial application of mannanase of Bacillus subtilis)

- IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease  
9002-10-2, Phenoloxidase 9003-99-0, Peroxidase 9012-54-8,  
Cellulase 9015-75-2, Pectate lyase  
9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase 9032-08-0,  
Glucoamylase 9032-75-1, Pectinase 9033-35-6, Pectin  
lyase 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0,  
.beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase  
37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase 51377-41-4,  
Cutinase 74191-29-0, Endoglucanase 76901-10-5, Xyloglucanase  
80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0,  
Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase  
RL: CAT (Catalyst use); MOA (Modifier or additive use); USES (Uses)  
(cloning, sequence, purifn. and industrial application of mannanase of  
Bacillus subtilis)
- IT 37288-54-3P  
RL: CAT (Catalyst use); PRP (Properties); PUR (Purification or recovery);  
PREP (Preparation); USES (Uses)  
(cloning, sequence, purifn. and industrial application of mannanase of  
Bacillus subtilis)
- IT 9000-30-0, Guar gum 9000-40-2, Locust bean gum  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(cloning, sequence, purifn. and industrial application of mannanase of  
Bacillus subtilis)
- IT 252307-08-7  
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL  
(Biological study)  
(nucleotide sequence; cloning, sequence, purifn. and industrial  
application of mannanase of Bacillus subtilis)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

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- (1) Akino; Agric Biol Chem 1998, V52(3), P773
- (2) Akino, T; JP 30-47076 A
- (3) Akino, T; JP 91-0228 HCAPLUS
- (4) Kunst, F; Mannan endo-1,4-beta-mannosidase homolog ydhT 1997
- (5) Res Dev Corp of Japan; JP 63-36775 A 1988 HCAPLUS
- (6) Sadaie, Y; Bacillus subtilis DNA for phoB-rrnE-groESL region, complete cds  
1997
- (7) Shingijutsu Kaihatsu, K; JP 63-056289 A HCAPLUS
- (8) Shingijutsu Kaihatsu, K; JP 80-51975 A
- (9) Shingijutsu Kaihatsu, K; JP 88-0310 HCAPLUS
- (10) Shingijutsu Kaihatsu, K; JP 96-0227
- (11) Toshihiko, O; Bacillus sp DNA for endo-beta-1,4-mannanase, complete cds  
1997
- (12) Toshihiko, O; Bacillus sp gene for beta-mannanase, complete cds 1998

L38 ANSWER 19 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:359641 HCAPLUS

DN 131:29287

TI Pectate lyases from Bacillus species suitable for  
industrial processes

IN Andersen, Lene Nonboe; Schulein, Martin; Lange, Niels Erik Krebs;  
Bjornvad, Mads Eskelund; Moller, Soren; Glad, Sanne O. Schroder;  
Kauppinen, Markus Sakari; Schnorr, Kirk; Kongsbaek, Lars

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 97 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-88

ICS C12N009-88; C12R001-10; C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 40, 46

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9927084	A1	19990603	WO 1998-DK515	19981124
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6124127	A	20000926	US 1998-73684	19980506
	US 6258590	B1	20010710	US 1998-184217	19981102
	AU 9914825	A1	19990615	AU 1999-14825	19981124
	EP 1032658	A1	20000906	EP 1998-958820	19981124
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	BR 9815007	A	20001003	BR 1998-15007	19981124
	US 6187580	B1	20010213	US 1998-198955	19981124
	JP 2001526022	T2	20011218	JP 2000-522226	19981124
	WO 2000026464	A2	20000511	WO 1999-US24489	19991027
	WO 2000026464	A3	20000810		
	W: AE, AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	BR 9914968	A	20010710	BR 1999-14968	19991027
	EP 1159479	A2	20011205	EP 1999-960137	19991027
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI	DK 1997-1343	A	19971124		
	DK 1997-1344	A	19971124		
	US 1998-73684	A	19980506		
	US 1998-184217	A	19981102		
	US 1997-67240	P	19971202		
	US 1997-67249	P	19971202		
	WO 1998-DK515	W	19981124		
	WO 1999-US24489	W	19991027		
AB	A novel group of <b>pectate lyases</b> comprising the amino acid sequence Asn-Leu-Asn-Ser-Arg-Val-Pro (NLNSRVVP) belonging to Family 1 of polysaccharide lyases have good performance in industrial processes under neutral or alk. conditions such as laundering and textile processing. The <b>pectate lyase</b> may be derivable from Bacillus species. Sequences claimed in the patent were not available in the document.				
ST	<b>pectate lyase</b> gene sequence Bacillus; food additive <b>pectate lyase</b> Bacillus; textile processing <b>pectate lyase</b> Bacillus; <b>detergent</b> <b>pectate lyase</b> Bacillus				
IT	Protein motifs (CBD (cellulose-binding domain), fusion protein with <b>pectin lyase</b> ; <b>pectate lyases</b> from Bacillus species suitable for industrial processes)				
IT	Fibers RL: BPR (Biological process); BIOL (Biological study); PROC (Process)				



- (cellulosic, treatment of; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT Organelle  
(cellulosome, fusion protein of Clostridium thermocellum S1 subunit with **pectin lyase**; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT Textiles  
(cotton, treatment of; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT Molecular cloning  
(expression system; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT DNA sequences  
(of **pectate lyase** genes from Bacillus species suitable for industrial processes)
- IT Protein sequences  
(of **pectate lyases** from Bacillus species suitable for industrial processes)
- IT Bacillus (bacterium genus)  
Bacillus agaradhaerens  
Bacillus halodurans  
Bacillus licheniformis
- Detergents**  
Food additives  
(**pectate lyases** from Bacillus species suitable for industrial processes)
- IT Fruit and vegetable juices  
Wine  
(processing of; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT Cellulose pulp  
Textiles  
Yarns  
(treatment of; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT 226082-02-6P 226712-45-4P 226712-50-1P, **Lyase**, **pectate** (Bacillus strain AAI12) 226712-52-3P 226712-54-5P, **Lyase**, **pectate** (Bacillus strain I534)  
RL: BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(amino acid sequence; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Proteinase 9002-10-2, Phenoloxidase 9003-99-0, **Peroxidase** 9012-54-8, Cellulase 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase 9032-08-0, Glucoamylase 9032-75-1, Polygalacturonase 9033-35-6, **Pectin lyase** 9035-73-8, Oxidase 9037-80-3, Reductase 9067-74-7, Arabinosidase 9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 42613-30-9, Ligninase 51377-41-4, Cutinase 60748-69-8, Mannanase 76901-10-5, Xyloglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetylerase  
RL: FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)  
(compn. contg.; **pectate lyases** from Bacillus species suitable for industrial processes)
- IT 226087-36-1DP, **pectate lyases** contg. 226087-37-2DP,

pectate lyases contg. 226087-46-3DP, pectate  
lyases contg. 226087-49-6DP, pectate lyases  
contg.

RL: BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier  
or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL  
(Biological study); PREP (Preparation); USES (Uses)

(pectate lyases from Bacillus species suitable for  
industrial processes)

IT 9015-75-2P, Pectate lyase

RL: BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier  
or additive use); NUU (Other use, unclassified); PRP (Properties); PUR  
(Purification or recovery); BIOL (Biological study); PREP (Preparation);  
USES (Uses)

(pectate lyases from Bacillus species suitable for  
industrial processes)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Agency of Ind Sci & Technology; JP 56068393 A
- (2) Han; J Microbiol Biotechnol 1992, V2(4), P260 HCAPLUS
- (3) Hohnen Oil KK; JP 63146790 A HCAPLUS
- (4) KAO Corporation; EP 0870834 A1 1998 HCAPLUS
- (5) Kelly, C; Canadian journal of microbiology 1979, V24, P1164
- (6) Liao, C; EMBL Database Genbank/DBJ accession no L41673 1996
- (7) Miyazaki, Y; Agric Biol Chem 1991, V55(1), P25 HCAPLUS
- (8) OJI Paper Co; JP 2200191 A

L38 ANSWER 20 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:359640 HCAPLUS

DN 131:15715

TI Pectin-degrading enzymes from Bacillus licheniformis and their industrial  
applications

IN Andersen, Lene Nonboe; Schulein, Martin; Lange, Niels Erik Krebs;  
Bjornvad, Mads Eskelund; Schnorr, Kirk

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 94 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-88

ICS C12N009-88; C12R001-10; C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 40, 46

FAN.CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9927083	A1	19990603	WO 1998-DK514	19981124
W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6124127	A	20000926	US 1998-73684	19980506
AU 9914339	A1	19990615	AU 1999-14339	19981124
EP 1032657	A1	20000906	EP 1998-958214	19981124
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI			
BR 9815015	A	20001003	BR 1998-15015	19981124
US 6187580	B1	20010213	US 1998-198955	19981124

JP 2001524310 T2 20011204 JP 2000-522225 19981124

PRAI DK 1997-1344 A 19971124

US 1998-73684 A 19980506

DK 1997-1343 A 19971124

US 1997-67240 P 19971202

US 1997-67249 P 19971202

WO 1998-DK514 W 19981124

AB Pectin-degrading enzymes derived from or endogenous to *Bacillus licheniformis* or other *Bacillus* species which are .gtoreq.99% homologous to *Bacillus Licheniformis* based on aligned 16S rDNA sequences have optimum activity at pH higher than 8. The pectin-degrading enzymes belong to the enzyme classes **pectate lyases** (EC 4.2.2.2), **pectin lyases** (EC 4.2.2.10), and polygalacturonases (EC 3.2.1.15) and are useful in industrial processes under alk. conditions such as in textile processing and as an active ingredient, e.g. in laundry **detergents** and hard surface cleaning products. Gene and deduced amino acid sequences are provided for two **pectate lyases**, a **pectin lyase**, and a polygalacturonase.

ST pectin degrading enzyme *Bacillus*; **lyase pectate pectin** *Bacillus*; polygalacturonase *Bacillus*; sequence pectin degrading enzyme gene *Bacillus*

IT Protein motifs  
(CBD (cellulose-binding domain), fusion proteins with; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Fibers  
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)  
(cellulosic; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Organelle  
(cellulosome, fusion protein with cellulose-binding domain of S1 subunit of; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Textiles  
(cotton; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Molecular cloning  
(expression system; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT DNA sequences  
(of genes encoding pectin-degrading enzymes from *Bacillus licheniformis*)

IT Protein sequences  
(of pectin-degrading enzymes from *Bacillus licheniformis*)

IT *Bacillus licheniformis*  
Cellulose pulp  
**Detergents**  
Feed additives  
Yarns  
(pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Gene, microbial  
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)  
(pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Enzymes, biological studies  
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use,

unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)  
(pectolytic; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

## IT Surfactants

(prepn. contg.; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

## IT Fruit and vegetable juices

## Wine

(processing of; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

## IT Textiles

(treatment or modification of; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 226081-90-9P 226081-92-1P 226081-94-3P 226081-96-5P 226081-98-7P  
226082-00-4P 226082-02-6P 226082-03-7P

RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)

(amino acid sequence; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 226081-89-6P 226081-91-0P 226081-93-2P 226081-95-4P 226081-97-6P  
226081-99-8P 226082-01-5P

RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)

(nucleotide sequence; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

## IT 9015-75-2P, Pectate lyase 9032-75-1P,

Polygalacturonase 9033-35-6P, Pectin lyase

RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)

(pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Proteinase  
9002-10-2, Phenoloxidase 9003-99-0, Peroxidase 9012-54-8,  
Cellulase 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase  
9032-08-0, Glucoamylase 9035-73-8, Oxidase 9037-80-3, Reductase  
9067-74-7, Arabinosidase 9074-98-0, .beta.-Glucanase 9075-68-7,  
Pullulanase 37278-89-0, Xylanase 37329-65-0, Cellobiohydrolase  
39346-28-6, Galactanase 42613-30-9, Ligninase 51377-41-4, Cutinase  
60748-69-8, Mannanase 76901-10-5, Xyloglucanase 80146-85-6,  
Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase  
132965-81-2, Pectin acetyl esterase

RL: BUU (Biological use, unclassified); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)

(prepn. contg.; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

## RE

- (1) Agency of Ind SCI & Technology; JP 56131376 A HCAPLUS
- (2) Agency of Ind Sci & Technology; JP 56068393 A
- (3) Ciba-Geigy AG; EP 0683228 A2 1995 HCAPLUS
- (4) Godfrey, V; Journal of Applied Bacteriology 1994, V76, P13 HCAPLUS
- (5) Han; J Microbiol Biotechnol 1992, V2(4), P260 HCAPLUS
- (6) Hohnen Oil KK; JP 63146790 A HCAPLUS

- (7) KAO Corporation; EP 0870834 A1 1998 HCAPLUS  
 (8) Kao Corporation; WO 9845393 A2 1998 HCAPLUS  
 (9) Kelly, C; Canadian journal of microbiology 1979, V24, P1164  
 (10) Liao, C; EMBL Database Genbank/DDBJ accession no L41673 1996  
 (11) Miyazaki, Y; Agric Biol Chem 1991, V55(1), P25 HCAPLUS  
 (12) Sakamoto, T; FEBS Letters 1996, V398, P269 HCAPLUS

L38 ANSWER 21 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:48789 HCAPLUS

DN 130:106938

TI Cloning and characterization of endo-.beta.-1,4-glucanase from  
 Saccharothrix australiensis and its use in cleaning compositions

IN Bjornvad, Mads Eskelund; Hatakeyama, Mariko; Schulein, Martin; Nielsen,  
 Jack Bech

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 82 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9901543	A1	19990114	WO 1998-DK286	19980630
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			
	AU 9879082	A1	19990125	AU 1998-79082	19980630
	EP 1002059	A1	20000524	EP 1998-929243	19980630
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI			
	US 6207436	B1	20010327	US 1998-109841	19980702
PRAI	DK 1997-812	A	19970704		
	DK 1997-846	A	19970711		
	US 1997-53506	P	19970723		
	WO 1998-DK286	W	19980630		
AB	An enzyme prepn. comprising an enzyme having endo-.beta.-1,4-glucanase activity is provided from or endogeneous to a strain belonging to the genus Saccharothrix such as S. australiensis IFO 14444. The pH optimum of the enzyme was 8.0, and >50% relative activity was obtained between pH 6.5 and 9.0; its Km, Vmax, and dcat for phosphoric-acid swollen cellulose were calcd. An isolated DNA encoding the enzyme or enzyme core (the catalytically active domain of the enzyme) exhibiting endo-.beta.-1,4-glucanase activity is also provided. The expressed endoglucanase is useful in a <b>detergent</b> or fabric softener compn. or in the textile industry for improving the properties of cellulosic fibers or fabric or for providing a stone-washed look of denim. Tensile strength loss is induced by treating fabric with the endo-.beta.-1,4-glucanase from S. australiensis.				
ST	cellulase characterization Saccharothrix; sequence endoglucanase gene Saccharothrix; fabric treatment cellulase Saccharothrix				
IT	Functional sites (enzyme) (CBD (cellulose-binding domain); cloning and characterization of endo-.beta.-1,4-glucanase from Saccharothrix australiensis and its use				

- in cleaning compns.)
- IT Actinomyces  
Bacteria (Eubacteria)  
Fabric softeners  
Gram-positive bacteria (Firmicutes)  
Laundry **detergents**  
Molecular cloning  
Pseudonocardiaaceae  
Saccharothrix  
Saccharothrix aerocolonigenes  
Saccharothrix australiensis  
Saccharothrix coeruleofusca  
Saccharothrix cryophilis  
Saccharothrix flava  
Saccharothrix longispora  
Saccharothrix mutabilis capreolus  
Saccharothrix mutabilis mutabilis  
Saccharothrix syringae  
Saccharothrix texasensis  
Saccharothrix waywayandensis  
(cloning and characterization of endo-.beta.-1,4-glucanase from  
Saccharothrix australiensis and its use in cleaning compns.)
- IT Bacillus (bacterium genus)  
Bacillus lentus  
Bacillus subtilis  
Escherichia coli  
Pseudomonas  
Pseudomonas fluorescens  
Pseudomonas mendocina  
Saccharomyces  
Saccharomyces cerevisiae  
Streptomyces  
(recombinant host; cloning and characterization of endo-.beta.-1,4-  
glucanase from Saccharothrix australiensis and its use in cleaning  
compns.)
- IT 219675-46-4P  
RL: BAC (Biological activity or effector, except adverse); BPN  
(Biosynthetic preparation); NUU (Other use, unclassified); PRP  
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(amino acid sequence; cloning and characterization of  
endo-.beta.-1,4-glucanase from Saccharothrix australiensis and its use  
in cleaning compns.)
- IT 219675-48-6P  
RL: BAC (Biological activity or effector, except adverse); BPN  
(Biosynthetic preparation); NUU (Other use, unclassified); PRP  
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(cellulose-binding domain; cloning and characterization of  
endo-.beta.-1,4-glucanase from Saccharothrix australiensis and its use  
in cleaning compns.)
- IT 9012-54-8P, Endo-.beta.-1,4-glucanase  
RL: BAC (Biological activity or effector, except adverse); BPN  
(Biosynthetic preparation); NUU (Other use, unclassified); PRP  
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(cloning and characterization of endo-.beta.-1,4-glucanase from  
Saccharothrix australiensis and its use in cleaning compns.)
- IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9002-10-2, Phenol oxidase  
9003-99-0, **Peroxidase 9015-75-2, Pectate**  
**lyase** 9025-56-3, Hemicellulase 9025-98-3, Pectin  
methylesterase 9032-08-0, Glucoamylase 9032-75-1, Pectinase  
9033-35-6, **Pectin lyase** 9035-73-8, Oxidase

9037-80-3, Reductase 9074-98-0, .beta.-Glucanase 9075-68-7,  
 Pullulanase 37278-89-0, Xylanase 37329-65-0, Cellobiohydrolase  
 42613-30-9, Ligninase 51377-41-4, Cutinase 60748-69-8, Mannanase  
 76901-10-5, Xyloglucanase 80146-85-6, Transglutaminase 80498-15-3,  
 Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin  
 acetylcysteine

RL: MOA (Modifier or additive use); USES (Uses)

(fabric treatment with compn. contg. cellulase and; cloning and  
 characterization of endo-.beta.-1,4-glucanase from *Saccharothrix*  
*australiensis* and its use in cleaning compns.)

IT 9001-92-7, Proteinase

RL: NUU (Other use, unclassified); USES (Uses)

(fabric treatment with compn. contg. cellulase and; cloning and  
 characterization of endo-.beta.-1,4-glucanase from *Saccharothrix*  
*australiensis* and its use in cleaning compns.)

IT 219675-45-3 219675-47-5 219675-49-7

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL  
 (Biological study)

(nucleotide sequence; cloning and characterization of  
 endo-.beta.-1,4-glucanase from *Saccharothrix australiensis* and its use  
 in cleaning compns.)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anthony, R; US 5643791 A 1997 HCAPLUS

(2) Gurdev, S; Applied and Environmental Microbiology 1988, V54(10), P2521

L38 ANSWER 22 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:479608 HCAPLUS

DN 129:91432

TI Cloning and expression of heat-stable bacterial endoglucanase gene and use  
 of enzyme in industrial processes

IN Schulein, Martin; Bjornvad, Mads Eskelund; Norrevang, Iben Angelica

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 53 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C12N015-53; C12N009-42; C12R001-45

CC 3-3 (Biochemical Genetics)

Section cross-reference(s): 7, 10, 16, 17, 40, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9828410	A1	19980702	WO 1997-DK583	19971219
W:				
AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,				
DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG,				
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,				
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,				
UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW:				
GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI,				
FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM,				
GA, GN, ML, MR, NE, SN, TD, TG				
AU 9878735	A1	19980717	AU 1998-78735	19971219
EP 956348	A1	19991117	EP 1997-948752	19971219
R:				
AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
CN 1240478	A	20000105	CN 1997-180775	19971219
BR 9713780	A	20000321	BR 1997-13780	19971219
US 6043075	A	20000328	US 1997-995280	19971219
JP 2001507221	T2	20010605	JP 1998-528260	19971219

PRAI DK 1996-1483 A 19961220

WO 1997-DK583 W 19971219

AB An enzyme prepn. comprising an endo-1,4-.beta.-glucanase having optimum activity at a temp. above 85.degree. which is endogenous to a strain belonging to the Gram pos. bacteria, e.g., the strain Dictyoglomus DSM 6262, or which exhibits an activity towards CM-cellulose (CMC assay) at 70.degree. and pH 10 which is higher than 50% relative to the activity at 70.degree. and the optimum pH; and a DNA construct comprising a DNA sequence encoding the endo-1,4-.beta.-glucanase are disclosed. The enzyme is useful, e.g., in the textile industry for improving the properties of cellulosic fibers or fabric or for providing a stone-washed look of denim; or in industrial cleaning processes; or in heat extruded polymeric material; or in the conversion of biomass to sugars; or in the prodn. of alc.; or for predigestion of, e.g., grains used in feed prodn.; or in the prodn. of instant coffee or similar extn. processes. The Dictyoglomus cellulase gene was cloned, sequenced, and expressed in Bacillus subtilis. The recombinant enzyme was used for biopolishing cotton fabric.

ST sequence Dictyoglomus endoglucanase gene; cellulosic fiber fabric treatment Dictyoglomus cellulase

IT Cleaning

Molecular cloning

(cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Carbohydrates, preparation

RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)

(conversion of biomass to; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Biomass

(conversion to sugars of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Aspergillus

Aspergillus oryzae

Bacillus (bacterium genus)

Bacillus lentus

Bacillus licheniformis

Bacillus liquefaciens

Bacillus subtilis

Escherichia coli

Filamentous fungi

Fusarium

Fusarium graminearum

Saccharomyces

Saccharomyces cerevisiae

Trichoderma

Trichoderma reesei

(endoglucanase gene cloning/expression in; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Clostridium

Dictyoglomus

Gram-positive bacteria (Firmicutes)

(endoglucanase of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Genes (microbial)

RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)

(for endoglucanase; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Polymers, preparation



- RL: IMF (Industrial manufacture); PREP (Preparation)  
(heat-extruded; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT Fabrics  
(improvement of properties of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT Cellulosic fibers  
RL: PRP (Properties)  
(improvement of properties of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT DNA sequences  
(of endo-1,4-.beta.-glucanase gene of Dictyoglomus DSM 6262)
- IT Protein sequences  
(of endo-1,4-.beta.-glucanase of Dictyoglomus DSM 6262)
- IT Feed  
(predigestion of grain for; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT Cereal (grain)  
(predigestion of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT Instant coffee  
(prepn. of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT 209675-69-4P, Cellulase (Dictyoglomus strain DSM-6262)  
RL: BAC (Biological activity or effector, except adverse); CAT (Catalyst use); FFD (Food or feed use); NUU (Other use, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(amino acid sequence; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT 9012-54-8P, e.c. 3.2.1.4  
RL: BAC (Biological activity or effector, except adverse); CAT (Catalyst use); FFD (Food or feed use); NUU (Other use, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT 64-17-5P, Ethanol, preparation  
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)  
(cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Protease 9003-99-0, Peroxidase 9015-75-2, Pectate lyase 9025-98-3, Pectin methylesterase 9032-75-1, Polygalacturonase 9033-35-6, Pectin lyase 37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 60748-69-8, Mannanase 74191-29-0, Endoglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase  
RL: BUU (Biological use, unclassified); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)  
(enzyme compn. contg. endoglucanase and; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)
- IT 209675-68-3  
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)  
(nucleotide sequence; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

L38 ANSWER 23 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:163676 HCAPLUS

DN 128:214198

TI Cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*

IN Bjornvad, Mads Eskelund; Nielsen, Preben

PA Novo Nordisk A/S, Den.; Bjornvad, Mads Eskelund; Nielsen, Preben

SO PCT Int. Appl., 118 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

CC 3-3 (Biochemical Genetics)

Section cross-reference(s): 7, 10, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9808940	A1	19980305	WO 1997-DK348	19970826
	W:				
	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:				
	GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9739389	A1	19980319	AU 1997-39389	19970826
PRAI	DK 1996-893		19960826		
	DK 1996-1015		19960917		
	WO 1997-DK348		19970826		
OS	MARPAT 128:214198				
AB	An enzyme prepn. consisting essentially of an endo-.beta.-1,4-glucanase (EC 3.2.1.4) derived from the bacterial genera <i>Cellvibrio mixtus</i> or <i>Cellvibrio gilvus</i> is produced by recombinant techniques using a cloned DNA sequence encoding the enzyme. Endo-.beta.-1,4-glucanase from <i>C. mixtus</i> DM 1523 comprises a gene-deduced sequence of 527 amino acids, including a signal peptide of 32 amino acid residues, a cellulose-binding domain belonging to family IIa (residues 33-134), a serine-rich linker (135-185), a cellulose-binding domain belonging to family X (186-234), a second serine-rich linker (235-277), and a catalytic domain (residues 278 to the end) belonging to family 45 of the glycosyltransferases. The endo-.beta.-1,4-glucanase has 2 conserved regions, a first amino acid sequence consisting of 15 amino acid residues having sequence and a second amino acid sequence consisting of 6 amino acid residues having sequence, and is useful in industrial application conventionally using cellulolytic enzymes. Techniques are described for constructing a hybrid endoglucanase comprising the <i>C. mixtus</i> cel45 core with <i>Humicola insolens</i> EG V linker and CBD, and for transformation and expression of the <i>Cellvibrio</i> enzyme in <i>Pseudomonas fluorescens</i> and <i>P. cepacia</i> .				
ST	endoglucanase gene sequence cloning <i>Cellvibrio</i> ; cellulase gene sequence cloning <i>Cellvibrio</i>				
IT	<i>Cellvibrio gilvus</i> <i>Cellvibrio mixtus</i> Enzyme kinetics Laundry <b>detergents</b> Molecular cloning (cloning and gene sequence of novel endoglucanases from <i>Cellvibrio mixtus</i> and <i>C. gilvus</i> )				
IT	Genes (microbial)				

- RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT Cell wall (plant)  
Plant (Embryophyta)  
(degrdn. of plant material by enzymic compns.; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT *Humicola insolens*  
(hybrid endoglucanase construction from *Humicola* and *Cellvibrio*; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT *Pseudomonas cellulosa*  
(hybrid endoglucanase construction from *Humicola* and *Pseudomonas*; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT DNA sequences  
(of endoglucanase genes from *Cellvibrio mixtus* and *C. gilvus*)
- IT Protein sequences  
(of endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT *Burkholderia cepacia*  
*Pseudomonas fluorescens*  
(transformation and expression of endoglucanase in; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT 204338-43-2P 204338-45-4P 204338-46-5P 204338-49-8P 204338-51-2P  
204338-53-4P  
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(amino acid sequence; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT 9012-54-8P, Cellulase  
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Proteinase  
9003-99-0, **Peroxidase** 9015-75-2, **Pectate lyase** 9025-98-3, Pectin methylesterase 9032-75-1, Polygalacturonase **9033-35-6, Pectin lyase**  
37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 74191-29-0, Endoglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase  
RL: BUU (Biological use, unclassified); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)  
(enzymic compn. contg. cellulase and; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)
- IT 204338-42-1P 204338-44-3P 204338-47-6P 204338-48-7P 204338-50-1P  
204338-52-3P  
RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)  
(nucleotide sequence; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

L38 ANSWER 24 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:126326 HCAPLUS

DN 128:169015

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

TI **Detergent** compositions comprising **pectin lyase**  
 IN Herbots, Ivan Maurice Alfons Jan; Baeck, Andre Cesar  
 PA Procter & Gamble Company, USA; Herbots, Ivan Maurice Alfons Jan; Baeck, Andre Cesar  
 SO PCT Int. Appl., 93 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C11D003-386  
 CC 46-5 (Surface Active Agents and **Detergents**)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9806807	A1	19980219	WO 1996-US12961	19960809
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9667698	A1	19980306	AU 1996-67698	19960809
	EP 925345	A1	19990630	EP 1996-928107	19960809
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
	CN 1229429	A	19990922	CN 1996-180454	19960809
	JP 2000500814	T2	20000125	JP 1998-509649	19960809
PRAI	WO 1996-US12961		19960809		
AB	Dishwashing, hard surface cleaning and laundry <b>detergent</b> comps. contain a <b>pectin lyase</b> enzyme, esp. an alk. <b>pectin lyase</b> substantially free of other pectic enzymes for improving overall cleaning performance and stain/soil removal benefits, in particular removal of body, plant, dried-on fruit and vegetables juice soils/stains.				
ST	<b>detergent</b> compn <b>pectin lyase</b> enzyme; laundry <b>detergent</b> alk <b>pectin lyase</b> ; dishwashing <b>detergent</b> <b>pectin lyase</b> ; cleaner hard surface <b>pectin lyase</b>				
IT	Fabric softeners (detergent and fabric softener comps. comprising <b>pectin lyase</b> enzyme)				
IT	Laundry <b>detergents</b> (detergent comps. comprising <b>pectin lyase</b> enzyme)				
IT	<b>Detergents</b> (hard-surface cleaners; <b>detergent</b> comps. comprising <b>pectin lyase</b> enzyme)				
IT	Dishwashing <b>detergents</b> (laundry and dishwashing <b>detergent</b> comps. comprising <b>pectin lyase</b> enzyme)				
IT	25751-21-7, Acrylic acid-methacrylic acid copolymer RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (480N; <b>detergent</b> comps. comprising <b>pectin lyase</b> enzyme and)				
IT	9033-35-6, <b>Pectin lyase</b> RL: BUU (Biological use, unclassified); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses) (alk.; <b>detergent</b> comps. comprising <b>pectin lyase</b> enzyme)				

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Protease 9012-54-8, Cellulase  
 RL: BUU (Biological use, unclassified); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses).  
 (detergent compns. comprising **pectin lyase** enzyme and)

IT 10332-33-9, Sodium perborate monohydrate 15630-89-4, Sodium percarbonate 37244-98-7  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (detergent compns. comprising **pectin lyase** enzyme and)

IT 9045-81-2, Poly(vinylpyridine N-oxide)  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (dye transfer inhibitor; **detergent** compns. comprising **pectin lyase** enzyme and)

L38 ANSWER 25 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:794818 HCAPLUS

DN 130:106926

TI Pullulanase mutants of Bacillus strain KSM-AP1378 for preparation of **detergents** and starch-saccharifying agents

IN Sumitomo, Nobuyuki; Hatada, Yuji; Ichimura, Takashi; Saito, Kazuhiro; Kawai, Shuji; Ito, Susumu

PA Kao Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C12N015-09

ICS C07H021-04; C11D003-386; C11D007-42; C12N001-21; C12N009-00;

C12N009-44; C12N015-09; C12R001-07; C12R001-19

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10327868	A2	19981215	JP 1997-141596	19970530
AB	Prepn. of mutants of pullulanase of Bacillus strain KSM-AP1378 by deletion or substitution mutation at 443-Met and/or 557-Ala to improved their resistance to oxidizing agents; and use of the mutants for the prepn. of <b>detergents</b> and starch-saccharifying agents are described. The pullulanase is derived from the domain 1023-Met.apprx.1820-Asp of the 1938-amino-acid amylopullulanase of Bacillus strain KSM-AP1378. Prepn. of single mutants M443A, M443E, M443I, M443L, M443N, M443R, M443S, and M443V; prepn. of double mutants such as M443L/A557C; their stability in the presence of H2O2; and the washing ability of a <b>detergent</b> compn. contg. them were also shown. Also claimed are the <b>detergent</b> and saccharifying agents contg. the pullulanase mutants and other enzymes such as .alpha.-amylase, glucoamylase, etc.				
ST	Bacillus pullulanase mutant oxidant resistance; <b>detergent</b> saccharifying agent Bacillus pullulanase mutant				
IT	Protein sequences (of pullulanase mutants of Bacillus strain KSM-AP1378)				
IT	Deletion (mutation) Substitution (mutation) (prepn. of pullulanase mutants of Bacillus strain KSM-AP1378 resistant to oxidizing agents by)				
IT	Bacillus (bacterium genus) <b>Detergents</b>				

## Saccharification

(pullulanase mutants of Bacillus strain KSM-AP1378 for prepn. of **detergents** and starch-saccharifying agents)

- IT Oxidizing agents  
(pullulanase mutants of Bacillus strain KSM-AP1378 resistant to)
- IT 125498-73-9, Amylopullulanase  
RL: BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(Alk.; pullulanase mutants of Bacillus strain KSM-AP1378 derived from)
- IT 219674-04-1P 219674-05-2P 219674-08-5P 219674-09-6P 219674-11-0P  
219674-12-1P 219674-13-2P 219674-14-3P  
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(amino acid sequence; pullulanase mutants of Bacillus strain KSM-AP1378 for prepn. of **detergents** and starch-saccharifying agents)
- IT 9000-90-2, .alpha.-Amylase 9001-05-2, Catalase 9001-42-7, Maltase  
9001-62-1, Lipase 9001-92-7, Protease 9003-99-0, **Peroxidase**  
9012-54-8, Cellulase 9023-92-1, Proto pectinase 9032-08-0,  
Glucoamylase 9032-75-1, Pectinase **9033-35-6, Pectin**  
**lyase** 9067-73-6, Isoamylase 80498-15-3, Laccase 119632-58-5,  
Neopullulanase  
RL: CAT (Catalyst use); NUU (Other use, unclassified); USES (Uses)  
(**detergent** or saccharifying agent compn. contg. Bacillus pullulanase mutants and)
- IT 9075-68-7P, Pullulanase  
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(pullulanase mutants of Bacillus strain KSM-AP1378 for prepn. of **detergents** and starch-saccharifying agents)

L38 ANSWER 26 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1997-192920 [17] WPIX

DNC C1997-061747

TI Selection of enzymes for use in **detergents** - using a phage display system in a **detergent** compsn. which has a negative impact on enzyme activity.

DC D16 D25

IN BJORNVAD, M E; DIDERICHSEN, B; MARKVARDSEN, P; MIKKELSEN, F

PA (NOVO) NOVO-NORDISK AS; (NOVO) NOVO NORDISK AS

CYC 74

PI WO 9709446 A1 19970313 (199717)\* EN 24p C12Q001-25  
RW: AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD  
SE SZ UG  
W: AL AM AT AU AZ BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE HU  
IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO  
NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN  
AU 9667854 A 19970327 (199729) C12Q001-25  
EP 854933 A1 19980729 (199834) EN C12Q001-25  
R: AT BE CH DE DK ES FI FR GB GR IE IT LI NL PT SE  
CN 1196094 A 19981014 (199909) C12Q001-25  
JP 11511977 W 19991019 (200001) 27p C12N015-09  
US 6194183 B1 20010227 (200114) C12N009-99  
ADT WO 9709446 A1 WO 1996-DK368 19960904; AU 9667854 A AU 1996-67854 19960904;  
EP 854933 A1 EP 1996-928355 19960904, WO 1996-DK368 19960904; CN 1196094 A  
CN 1996-196801 19960904; JP 11511977 W WO 1996-DK368 19960904, JP  
1997-510783 19960904; US 6194183 B1 Cont of WO 1996-DK368 19960904, US  
1998-17612 19980202  
FDT AU 9667854 A Based on WO 9709446; EP 854933 A1 Based on WO 9709446; JP

11511977 W Based on WO 9709446  
 PRAI DK 1995-988 19950907  
 REP 2.Jnl.Ref; WO 9522615  
 IC ICM C12N009-99; C12N015-09; C12Q001-25  
 ICS C11D003-386; C12N009-00; C12N009-20; C12N009-50; C12N011-16;  
 C12Q001-02; C12Q001-37; C12Q001-44; C12Q001-70  
 ICA C12N001-21  
 ICI C12N001-21, C12R001:19  
 AB WO 9709446 A UPAB: 19970424

A new method of selecting enzymes or especially enzyme variants suitable for use in **detergents** is claimed, where the enzyme variants to be selected are in a mixture of enzyme variants which are each displayed on the surface of cells or phage particles, comprises: (a) introducing the mixture into a **detergent** composition in fluid form under conditions (e.g. high or low temperatures) that will inactivate, or have a negative impact on the activity of, most of the enzyme variants; (ii) reacting the mixture with a catcher molecule that will bind specifically only to enzyme variants that exhibit the property sought for, to form a complex between the cell or phage displayed enzyme variant and the catcher; (c) separating the complex from the remaining parts of the mixture; (d) dissociating the complex to isolate such cell(s) or phage(s) that displayed the enzyme variant; (e) introducing the phage into a host where it will multiply, or cultivating the cell under conditions conducive to its multiplication; and (f) isolating a DNA molecule coding for the enzyme variant from the genome of the cell or phage. Also claimed are: (1) an enzyme selected using the above method; and (2) a **detergent** composition comprising an enzyme selected using the above method.

USE - The methods can be used for selecting variants of enzymes having bleaching properties such as proteases, cellulases, amylases, **lyases**, xylanases, **pectinases**, polygalacturonases, oxidases, laccases, oxidoreductases, transglutaminases, galactosidases, phytases or **peroxidases** for use in **detergents**.

Dwg.0/1

FS CPI  
 FA AB  
 MC CPI: D05-H09; D11-A; D11-B01A; D11-B02

L38 ANSWER 27 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD  
 AN 1997-347460 [32] WPIX  
 DNC C1997-111924  
 TI Stabilisation of enzymes - comprises adding ectoin to enzymes e.g. oxidoreductase.

DC B04 D13 D16 D25 E13 F06  
 PA (DAIN) DAINIPPON PHARM CO LTD  
 CYC 1

PI JP 09143167 A 19970603 (199732)\* 5p C07D239-06  
 ADT JP 09143167 A JP 1995-323801 19951117  
 PRAI JP 1995-323801 19951117

IC ICM C07D239-06  
 ICS C12N009-96  
 AB JP 09143167 A UPAB: 19970806

Stabilisation of enzymes comprises adding ectoin to the enzymes. The enzymes are amylase, lipase, cellulase, and protease. The enzyme is in solution.

Ectoin, 1,4,5,6-tetrahydro-2-methyl-4 -pyrimidine carboxylic acid, is produced by a halophile, e.g. Halomonas sp. KS-3 (FERM BP-4841), by incubation.

USE - The method can stabilise oxidoreductase (e.g. **peroxidase**), transferase (e.g. glucanotransferase), **lyase** (e.g. **pectin lyase**), isomerase (e.g. glucose

isomerase), synthetase (e.g. glutamine synthase), and hydrolase (e.g. lipase), isolated from animals, plants or microorganisms, particularly amylase, lipase, cellulase, protease. The method can be utilised in fields of foods, **detergents**, diagnostics or textile industry.

**ADVANTAGE** - The enzyme solutions can be preserved for a long time. Enzyme activity is maintained. Thermal stability is increased in thermally unstable enzymes, so they can be used at a higher temperature than 55 degrees C at which temperature putrefaction by microorganisms can be avoided. The method can be effected in a simple and conventional manner.

In an example, stabilisation of an alpha-amylase solution: Alpha-amylase (bacterium origin) was dissolved in water (treated with an ion exchange resin) at 50 mcg/ml concentration. There was added ectoin so as to be 10% (w/v) and the mixture was kept at 37 degrees C. The enzyme activity was determined from time-to-time using soluble starch by the Somogyi-Nelson method (J.Biol.Chem., 153, 375 (1944); J.Biol.Chem., 195, 19 (1952)). Figure 1 shows the result, wherein x-axis indicates days, y-axis enzyme activity (%) remaining, black square 10% ectoin-added solution, and black circle no addition of ectoin.

Dwg.1/5

FS

CPI

FA

AB; GI; DCN

MC

CPI: B04-L05B; B04-L05C; B07-D12; B11-C; D03-H01Q; D05-A02; D05-H09; D11-B02; E07-D04D; F01-H06; F03-J03

L38 ANSWER 28 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:718350 HCAPLUS

DN 126:3771

TI Mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing

IN Schuelein, Martin; Andersen, Lene Nonboe; Lassen, Soeren Flensted; Kauppinen, Markus Sakari; Lange, Lene; Nielsen, Ruby Ilum; Ihara, Michiko; Takagi, Shinobu

PA Novo Nordisk A/s, Den.

SO PCT Int. Appl., 406 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C11D003-386; D06M016-00

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 40, 43, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9629397	A1	19960926	WO 1996-DK105	19960318
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
CA 2214116	AA	19960926	CA 1996-2214116	19960318
AU 9649394	A1	19961008	AU 1996-49394	19960318
AU 715423	B2	20000203		
EP 815209	A1	19980107	EP 1996-905762	19960318
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
CN 1182451	A	19980520	CN 1996-193494	19960318
BR 9607646	A	19980616	BR 1996-7646	19960318
JP 11502701	T2	19990309	JP 1996-527993	19960318
US 6001639	A	19991214	US 1996-651136	19960521



PRAI DK 1995-272 19950317  
 DK 1995-885 19950808  
 DK 1995-886 19950808  
 DK 1995-887 19950808  
 DK 1995-888 19950808  
 DK 1996-137 19960212  
 WO 1996-DK105 19960318

OS MARPAT 126:3771

AB Cellulolytic enzymes (endoglucanases, cellulases) were isolated from such fungi as *Myceliophthora thermophila*, *Acremonium*, *Thielavia terrestris*, *Macrophomina phaseolina*, *Crinipellis scabellia*, *Volutella colletotrichoides*, and *Sordaria fimicola*. The cDNAs for the enzymes were isolated characterized by mol. screening and PCR cloning using degenerate, deoxyinosine-contg. oligonucleotide primers corresponding to 4 highly conserved amino acid regions found in known amino acid sequences, and DNA constructs contg. the cDNAs were used to express the enzymes in transformed *Aspergillus oryzae* or *A. niger*. The enzyme preps. consist essentially of an enzyme having cellulolytic activity and comprise a first amino acid sequence of 14 residues having the sequence Thr-Arg-X3-X4-Asp-Cys-Cys-X8-X9-X10-Cys-X12-Trp-X14, in which X3 and X4 independently is Trp, Tyr or Phe; X8 is Arg, Lys or His; each of X9, X10, X12 and X13 is any of the 20 naturally occurring amino acid residues; and a second amino acid sequence of 5 residues having the sequence Trp-Cys-Cys-XX4-Cys in which XX4 is any of the 20 naturally occurring amino acid residues with the proviso that, in the first amino acid sequence, (i) when X12 is Ser, then X14 is not Ser, and (ii) when X12 is Gly, then X14 is not Ala. Gene fusions were also constructed between endoglucanases from *Myceliophthora thermophila*, *Macrophomina phaseolina*, and *Crinipellis scabellia* and the linker/cellulose-binding C-terminal region of the endoglucanase from *Humicola insolens*. The enzymes perform excellently in **detergent**, laundering, textile, and papermaking pulp applications. PCR-facilitated detection of cellulolytic enzymes and their cDNA sequences are also described from 46 filamentous and monocentric fungi representing 32 genera.

ST endoglucanase cDNA cloning sequence fungi; cellulase cDNA cloning sequence fungi; **detergent** endoglucanase fungi; textile treatment endoglucanase fungi; paper pulp processing endoglucanase fungi

IT Enzymes, properties

RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (cellulolytic; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT *Aspergillus*

*Aspergillus niger*

*Aspergillus oryzae*

*Escherichia coli*

Eukaryote (Eukaryotae)

*Fusarium*

*Fusarium graminearum*

*Saccharomyces cerevisiae*

*Trichoderma*

Yeast

(cloning hosts; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Cell wall (microbial)

Plant tissue

(degrdn.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper

- pulp processing)
- IT Surfactants  
(**detergent** prepns. contg.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
- IT Quaternary ammonium compounds, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(**detergent** prepns. contg.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
- IT Plasmids  
(expression vectors; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
- IT Genetic vectors  
(expression; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
- IT cDNA sequences  
(for endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
- IT Fungi  
(hymenomycetous; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
- IT Acremonium  
Agaricaceae  
Agaricales  
Aphylllophorales  
Apiosordaria  
Archiascomycetes  
Ascobolaceae  
Ascobolus  
Ascobolus stictoides  
Auriculariales  
Bjerkanderaceae  
Blastocladiiales  
Cellulose pulp  
Ceratostomaceae  
Chaetomiaceae  
Chaetomium  
Chaetomium brasiliense  
Chaetomium cuniculorum  
Chaetomium murorum  
Chaetomium virescens  
Chaetostylum  
Chaetostylum fresenii  
Chytridiales  
Chytridiomycota  
Cladorrhinum foecundissimum  
Colletotrichum  
Corynascus thermophilus  
Crinipellis  
Crinipellis scabella  
Cucurbitariaceae  
Cylindrocarpon  
**Detergents**  
Diaporthales  
Diaporthe  
Diaporthe syngenesia

Diplodia  
Diplodia gossypina  
Discomycetes  
Dothideales  
Eurotiales  
Exidia  
Exidia glandulosa  
Exidiaceae  
Fabrics  
Fomes  
Fomes fomentarius  
Fungi  
Fusarium anguioides  
Fusarium lycopersici  
Fusarium oxysporum passiflorae  
Fusarium poae  
Fusarium solani  
Gliocladium  
Gliocladium catenulatum  
Glomerella cingulata orbiculare  
Hemiascomycetes  
Humicola grisea  
Humicola insolens  
Humicola nigrescens  
Hypocreaceae  
Lasiosphaeriaceae  
Loculoascomycetes  
Macrophomina  
Macrophomina phaseolina  
Microorganism  
Microsphaeropsis  
Molecular cloning  
Mucoraceae  
Myceliophthora  
Myceliophthora thermophila  
Nectria  
Nectria pinea  
Nigrospora  
Nodulisporium  
Nucleic acid hybridization  
PCR (polymerase chain reaction)  
Panaeolus  
Penicillium  
Penicillium chrysogenum  
Penicillium verruculosum  
Pezizales  
Phycomyces  
Phycomyces nitens  
Phyllachoraceae  
Phyllachorales  
Plectomycetes  
Polyporaceae  
Poronia  
Poronia punctata  
Rhizomucor  
Rhizomucor pusillus  
Rhizophlyctis  
Rhizophlyctis rosea  
Rhytismatales  
Saccobolus

Saccobolus dilutellus  
Schizophyllaceae  
Schizophyllum (fungus)  
Scytalidium  
Scytalidium thermophilum  
Softening agents  
Sordaria  
Sordaria fimicola  
Sordaria macrospora  
Sordariaceae  
Spizellomycetaceae  
Spizellomycetales  
Spongipellis  
Syspastospora  
Syspastospora boninensis  
Thamnidiaceae  
Thermomyces  
Thermomyces verrucosus  
Thielavia  
Thielavia terrestris  
Trametes  
Trichocomaceae  
Tricholomataceae  
Trichosphaeriales  
Ulospora  
Ulospora bilgramii  
Valsaceae  
Volutella  
Volutella colletotrichoides  
Xylaria  
Xylaria hypoxylon  
Xylariaceae  
Xylariales  
Zygomycota

(mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Genes (microbial)

RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)

(mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Antibodies

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Protein sequences

(of endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Oligodeoxyribonucleotides

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (primers; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183628-39-9 183628-40-2 183628-41-3 183628-42-4

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (PCR primer; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and

paper pulp processing)

IT 183599-47-5P 183599-49-7P 183599-51-1P 183599-53-3P 183599-55-5P  
 183599-57-7P 183599-59-9P 183599-61-3P 183599-63-5P 183599-65-7P  
 183599-67-9P 183599-69-1P 183599-71-5P  
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (amino acid sequence; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183476-44-0 183476-45-1 183476-46-2 183476-47-3 183476-48-4  
 183599-74-8 183681-10-9 183681-11-0 183681-15-4 183681-26-7  
 183681-27-8 183681-29-0 183681-30-3 183681-31-4 183681-32-5  
 183681-33-6 183681-34-7 183681-35-8 183681-36-9, Cellulase (Phycomyces nitens fragment) 183681-37-0 183681-38-1, Cellulase (Coniothecium fragment) 183681-39-2 183681-40-5 183681-41-6  
 183681-42-7 183681-43-8  
 RL: PRP (Properties) (amino acid sequence; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183476-49-5P 183476-50-8P 183476-51-9P  
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (conserved peptide domain; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Proteinase  
 9003-99-0, **Peroxidase** 9015-75-2, **Pectate lyase** 9025-98-3, Pectin methylesterase 9032-75-1, Polygalacturonase 9033-35-6, **Pectin lyase** 37278-89-0, Xylanase 37325-54-5, Arabinase 37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectinacetyesterase  
 RL: NUU (Other use, unclassified); USES (Uses) (enzyme compns. contg.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 9012-54-8P, Cellulase 74191-29-0P, Endoglucanase  
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183599-44-2P 183599-46-4P 183599-48-6P 183599-50-0P 183599-52-2P  
 183599-54-4P 183599-56-6P 183599-58-8P 183599-62-4P 183599-64-6P  
 183599-66-8P 183599-68-0P 183599-70-4P  
 RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation) (nucleotide sequence; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183599-60-2 183599-72-6 183599-73-7 183599-75-9 183599-76-0  
 183599-77-1 183599-78-2 183599-79-3 183599-80-6 183599-81-7  
 183599-82-8 183599-83-9 183599-84-0 183599-85-1 183599-86-2  
 183599-87-3 183599-88-4 183599-89-5 183599-90-8 183599-91-9  
 183599-92-0 183599-93-1 183599-94-2 183599-95-3 183599-96-4  
 183599-97-5  
 RL: PRP (Properties) (nucleotide sequence; mol. screening and PCR cloning of novel

endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

L38 ANSWER 29 OF 31 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1996:456128 HCAPLUS  
 DN 125:108882  
 TI Enzyme preparations with cellulolytic activity from basidiomycetous fungi  
 IN Lange, Lene; Nielsen, Jack Bech; Schuelein, Martin  
 PA Novo Nordisk A/s, Den.  
 SO PCT Int. Appl., 68 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C12N009-42  
 ICS C11D003-386; D06M016-00; D21C009-00; C12S003-08; C12S011-00  
 CC 7-2 (Enzymes)  
 Section cross-reference(s): 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9619570	A1	19960627	WO 1995-DK518	19951222
	W: AL, AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9642987	A1	19960710	AU 1996-42987	19951222
	EP 799307	A1	19971008	EP 1995-941608	19951222
	R: DE, DK, FR, GB, NL				
	JP 10511410	T2	19981104	JP 1995-519439	19951222
	US 5972872	A	19991026	US 1997-870996	19970606
PRAI	DK 1994-1471		19941222		
	WO 1995-DK518		19951222		
AB	Enzyme prepns. with substantial cellulolytic activity, esp. endoglucanase activity, at alk. conditions are provided which are relatively stable in the presence of surfactants (linear alkylbenzenesulfonate) and at high temp. (50.degree. for 1 h). The enzymes are derived from or producible by a fungus selected from the Basidiomycetous families Coprinaceae and Bolbitiaceae, preferably from the group of strains belonging to the genera Psathyrella, Podaxis, Panaeolus, Coprinus, and Bolbitius. The enzyme prepns. may be useful in a <b>detergent</b> compn., a fabric softener compn. for textile treatment, for providing a stone-washed look of dyed cellulosic fabric, improving the drainage of paper pulp, or the de-inking of recycled paper.				
ST	cellulolytic enzyme basidiomycetous fungi <b>detergent</b> paper;				
	endoglucanase basidiomycetous fungi <b>detergent</b> paper				
IT	Paper (de-inking; enzyme prepns. with cellulolytic activity from basidiomycetous fungi)				
IT	Antioxidants Bleaching agents Perfumes Pigments Sequestering agents Solubilizers ( <b>detergent</b> compns. contg. enzymes and; enzyme prepns. with cellulolytic activity from basidiomycetous fungi)				
IT	Salts, uses				

- RL: NUU (Other use, unclassified); USES (Uses)  
(detergent compns. contg. enzymes and; enzyme prepns. with  
cellulolytic activity from basidiomycetous fungi)
- IT Agaricaceae  
Bolbitiaceae  
Bolbitius  
Bolbitius aleuriatus  
Coprinus  
Coprinus cinereus  
Coprinus disseminatus  
Coprinus domesticus  
Coprinus ephemerus  
Coprinus friesii  
Coprinus micaceus  
Coprinus picaceus  
Coprinus radians  
Coprinus subimpatiens  
Detergents  
Panaeolus  
Panaeolus semiovatus  
Podaxis  
Podaxis pistillaris  
Psathyrella  
Psathyrella candolleana  
Psathyrella prona  
Pulp, cellulose  
Textiles  
(enzyme prepns. with cellulolytic activity from basidiomycetous fungi)
- IT Surfactants  
(enzyme stability in presence of; enzyme prepns. with cellulolytic  
activity from basidiomycetous fungi)
- IT Softening agents  
(for textiles; enzyme prepns. with cellulolytic activity from  
basidiomycetous fungi)
- IT Sulfonic acids, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(1-alkene, sodium salts, enzyme stability in presence of; enzyme  
prepns. with cellulolytic activity from basidiomycetous fungi)
- IT Sulfonic acids, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(alkane, sodium salts, enzyme stability in presence of; enzyme prepns.  
with cellulolytic activity from basidiomycetous fungi)
- IT Polyoxyalkylenes, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(alkyl- and sulfo-terminated, sodium salts, enzyme stability in  
presence of; enzyme prepns. with cellulolytic activity from  
basidiomycetous fungi)
- IT Quaternary ammonium compounds, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(alkylbenzenesulfonates, enzyme stability in presence of; enzyme  
prepns. with cellulolytic activity from basidiomycetous fungi)
- IT Fungi  
(basidiomycetous, enzyme prepns. with cellulolytic activity from  
basidiomycetous fungi)
- IT Enzymes  
RL: BAC (Biological activity or effector, except adverse); NUU (Other use,  
unclassified); BIOL (Biological study); USES (Uses)  
(cellulolytic, enzyme prepns. with cellulolytic activity from  
basidiomycetous fungi)
- IT Fatty acids, uses

RL: NUU (Other use, unclassified); USES (Uses)  
 (sulfo, esters, enzyme stability in presence of; enzyme preps. with  
 cellulolytic activity from basidiomycetous fungi)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Proteinase  
 9003-99-0, Peroxidase 9015-75-2, Pectate  
 lyase 9025-98-3, Pectin methylesterase 9032-75-1,  
 Polygalacturonase 9033-35-6, Pectin lyase  
 37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0,  
 Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase  
 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0,  
 Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase

RL: NUU (Other use, unclassified); USES (Uses)  
 (cellulolytic enzyme preps. contg.; enzyme preps. with cellulolytic  
 activity from basidiomycetous fungi)

IT 74191-29-0, Endoglucanase

RL: BAC (Biological activity or effector, except adverse); NUU (Other use,  
 unclassified); BIOL (Biological study); USES (Uses)  
 (enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT 151-21-3, Sodium dodecyl sulfate, uses

RL: NUU (Other use, unclassified); USES (Uses)  
 (enzyme stability in presence of; enzyme preps. with cellulolytic  
 activity from basidiomycetous fungi)

L38 ANSWER 30 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:377223 HCAPLUS

DN 125:52369

TI An enzyme and enzyme preparation with endoglucanase activity from  
 Acremonium species

IN Schuelein, Martin; Oxenboell, Karen Margrethe; Andersen, Lene Nonboe;  
 Lassen, Soeren Flensted; Kauppinen, Markus Sakari; Nielsen, Jack Bech

PA Novo Nordisk A/s, Den.

SO PCT Int. Appl., 116 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICA C11D003-386; D06M016-00

ICI C12N009-42, C12R001-75

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 40, 43, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9611262	A1	19960418	WO 1995-DK400	19951006
W:	AL, AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ			
RW:	KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			
AU 9536045	A1	19960502	AU 1995-36045	19951006
EP 788541	A1	19970813	EP 1995-933337	19951006
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE			
JP 10507073	T2	19980714	JP 1995-512274	19951006
US 5919691	A	19990706	US 1997-809763	19970320
US 6071735	A	20000606	US 1997-956253	19971022
PRAI DK 1994-1160		19941006		
DK 1994-1296		19941111		
WO 1995-DK400		19951006		



- AB An enzyme compn. with substantial cellulolytic, esp. endoglucanase, activity at alk. conditions is derived from or producible by fungi from the genus *Acremonium*, and the enzyme compn. is not immunol. cross-reactive with antibodies raised against endoglucanases (EC 3.2.1.4) from *Humicola insolens* DSM 1800, *Fusarium oxysporum* DAM 2672, *Myceliophthora thermophila* CBS 117.65, or *Cephalosporium* sp. RYM-202. Seven cDNA sequences encoding a full-length or partial enzyme exhibiting endoglucanase activity were cloned from *Acremonium* CBS 265.96 and CBS 487.94. DNA construct vectors were constructed for the expression of the enzymes, esp. in *Aspergillus oryzae* or *A. niger* transformants. The enzyme compn. and the isolated or cloned and expressed cellulase of the invention may be useful in any industrial process requiring an alk. cellulase, e.g. for providing localized variation in the color d. of dyed fabric such as stone-washing of denim, for improving the drainage of an aq. suspension of paper pulp, for the de-inking of recycled paper, in **detergent** compns., and in fabric softeners.
- ST endoglucanase compn *Acremonium*; cellulase compn *Acremonium*; cDNA sequence cellulase *Acremonium*; paper pulp endoglucanase *Acremonium*; textile endoglucanase *Acremonium*; **detergent** endoglucanase *Acremonium*
- IT Oxidation catalysts  
Reduction catalysts  
(bleaching, **detergent** compn. contg. enzyme compn.  
and; enzyme and enzyme prepn. with endoglucanase activity from  
*Acremonium* species for use in)
- IT *Aspergillus*  
*Aspergillus niger*  
*Aspergillus oryzae*  
*Saccharomyces cerevisiae*  
*Trichoderma*  
Yeast  
(cloning host; enzyme and enzyme prepn. with endoglucanase activity  
from *Acremonium* species)
- IT Antioxidants  
Perfumes  
Pigments  
Sequestering agents  
Solubilizers  
Surfactants  
(**detergent** compn. contg. enzyme compn. and; enzyme and enzyme  
prepn. with endoglucanase activity from *Acremonium* species for use in)
- IT Enzymes  
RL: NUU (Other use, unclassified); USES (Uses)  
(**detergent** compn. contg. enzyme compn. and; enzyme and enzyme  
prepn. with endoglucanase activity from *Acremonium* species for use in)
- IT *Acremonium*  
*Acremonium acremonium*  
*Acremonium brachyphenium*  
*Acremonium dichromosporum*  
*Acremonium furcatum*  
*Acremonium incoloratum*  
*Acremonium obclavatum*  
*Acremonium pinkertoniae*  
*Acremonium roseogriseum*  
*Cephalosporium*  
Fermentation  
Fungi  
Molecular cloning  
*Paecilomyces persicinus*  
(enzyme and enzyme prepn. with endoglucanase activity from *Acremonium*  
species)

- IT **Detergents**  
(enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)
- IT Plasmid and Episome  
(expression vectors; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)
- IT Pulp, cellulose  
(improved drainage of aq. suspensions of paper pulp; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)
- IT Textiles  
(improvement of color d. of dyed; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)
- IT Enzymes  
RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(cellulolytic, enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)
- IT Deoxyribonucleic acid sequences  
(complementary, for cellulases from Acremonium species)
- IT Fungi  
(filamentous, cloning host; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)
- IT Paper  
(recycled, deinking; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)
- IT 7782-50-5, Chlorine, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(**detergent** compn. contg. enzyme compn. and capturing or reducing agents for; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)
- IT 9012-54-8P, Cellulase 74191-29-0P, Endoglucanase  
RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)
- IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Protease 9003-99-0, Peroxidase 9015-75-2, Pectate lyase 9025-98-3, Pectin methylesterase 37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 80146-85-6, Transglutaminase 80498-15-3, Laccase 132965-81-2, Pectin acetyl esterase  
RL: NUU (Other use, unclassified); USES (Uses)  
(enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)
- IT 177967-86-1 177967-87-2 177967-88-3 177967-89-4 177967-90-7 177967-91-8 177967-92-9  
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)  
(nucleotide sequence; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)

L38 ANSWER 31 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD  
AN 1996-268613 [27] WPIX  
DNC C1996-085426  
TI Prodn. of self-oligomerising peptide(s) with reduced allergenicity - used in household and personal cleaning prods., and in food and feeds etc..  
DC B04 C03 D16  
IN BJORNVAD, M E; PRENTO, A; BJORNVAD, M  
PA (NOVO) NOVO-NORDISK AS  
CYC 68

PI WO 9616177 A1 19960530 (199627)\* EN 85p C12N015-62  
RW: AT BE CH DE DK ES FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ  
UG  
W: AL AM AT AU BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP  
KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO  
RU SD SE SG SI SK TJ TM TT UA UG US UZ VN  
AU 9539240 A 19960617 (199638) C12N015-62  
EP 793726 A1 19970910 (199741) EN C12N015-62  
R: AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE  
JP 10509324 W 19980914 (199847) 89p C12N015-09  
ADT WO 9616177 A1 WO 1995-DK463 19951123; AU 9539240 A AU 1995-39240 19951123;  
EP 793726 A1 EP 1995-936995 19951123; WO 1995-DK463 19951123; JP 10509324  
W WO 1995-DK463 19951123; JP 1996-516467 19951123  
FDT AU 9539240 A Based on WO 9616177; EP 793726 A1 Based on WO 9616177; JP  
10509324 W Based on WO 9616177  
PRAI DK 1994-1343 19941124  
REP WO 9410191; WO 9410308  
IC ICM C12N015-09; C12N015-62  
ICS A01N037-46; A23L001-00; A61K007-00; A61K007-06; A61K007-46;  
A61K007-48; C11D003-386; C12N001-19; C12N001-21; C12N009-00;  
G02C013-00  
ICA D06M015-15  
AB WO 9616177 A UPAB: 19960710  
A novel process for producing a polypeptide with reduced allergenicity  
comprises (a) fermenting a microorganism capable of producing the  
polypeptide, and (b) recovering the polypeptide in substantially pure  
form, where the microorganism is modified in a manner such that the  
polypeptide molecules self-oligomerise. Also claimed are (1) a DNA  
construct (I) for producing polypeptides with reduced antigenicity  
comprising a DNA sequence encoding at least one polypeptide and at least  
one zipper domain operably linked together, (2) a recombinant vector or  
transformation vehicle comprising (I), (3) a cell comprising (I) or the  
vector of (2), (4) a microbially-produced polypeptide with reduced  
allergenicity produced according to the above method.  
USE - The polypeptides produced by this method are pref. enzymes e.g.  
proteases (metallo, acid, neutral or alkaline), lipases, cellulases,  
amylases, lyases, xylanases, pectinases, pullulanases,  
polygalacturonases, oxidases, lactases, oxidoreductases,  
transglutaminases, alpha-galactosidases, phytases and peroxidases  
. The enzyme is esp. Termamyl (RTM). The polypeptides may be used in  
household articles, in **detergents**, including dishwashing  
**detergents** and soap bars, in personal care prods. including oral  
care prods. for cleaning dentures and in dentifrices, in skin care prods.  
including creams and lotions, in hair care or treatment prods. including  
shampoos, in contact lens cleaning prods. and cosmetics. They may also be  
used in pharmaceuticals, agrochemicals and food and feed (all claimed).  
Dwg.6/6  
FS CPI  
FA AB; GI  
MC CPI: B04-C03; C04-C03; B04-E03F; C04-E03F; B04-E08; C04-E08; B04-F01;  
C04-F01; B04-L05C; C04-L05C; B04-N04; C04-N04; B11-A01; C11-A01;  
D03-A; D03-G; D05-C03B; D05-C03C; D05-C03E; D05-H12C; D05-H12E;  
D05-H14A1; D05-H14A2; D05-H17C; D08-B04; D08-B08; D08-B09A; D11-B02;  
D11-D01C